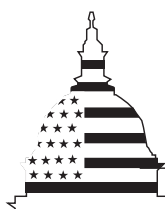


February 2001

# TENNESSEE VALLEY AUTHORITY

## Debt Reduction Efforts and Potential Stranded Costs



G A O

Accountability \* Integrity \* Reliability



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**Abbreviations**

CBO	Congressional Budget Office
CWIP	construction work in progress
EEI	Edison Electric Institute
EIA	Energy Information Administration
EPAct	Energy Policy Act of 1992
FASB	Financial Accounting Standards Board
FERC	Federal Energy Regulatory Commission
IOU	investor-owned utilities
kWh	kilowatthour
PP&E	property, plant, and equipment
SFAS	Statement of Financial Accounting Standards
TVA	Tennessee Valley Authority



United States General Accounting Office  
Washington, D.C. 20548

February 28, 2001

The Honorable Bob Smith  
Chair, Committee on Environment  
and Public Works  
United States Senate

The Honorable Mitch McConnell  
United States Senate

This report responds to your request that we review several issues pertaining to the Tennessee Valley Authority's (TVA) financial condition. Increasing competition in electricity markets led TVA management to develop a 10-year business plan in 1997 to position TVA to be more competitive. Among the objectives in the plan was reducing TVA's cost of power, primarily by cutting its \$27.4 billion debt in half by 2007.

Because TVA is expected to have to compete with other utilities in the future and, as we reported in 1999,<sup>1</sup> will not achieve the debt reduction goal as laid out in its 10-year business plan, you expressed concern about TVA's likely financial condition and competitiveness in the years ahead. You asked that we examine TVA's (1) progress in reducing debt and recovering the costs of deferred assets,<sup>2</sup> (2) financial condition, including debt and fixed cost ratios, compared to that of other utilities, (3) potential stranded costs,<sup>3</sup> options for recovering them, and how they are linked to TVA's debt, and (4) bond rating and its impact on TVA's interest costs. As agreed with your offices, the first three issues are the subjects of this report; we plan to issue a separate report on the fourth issue.

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<sup>1</sup>*Tennessee Valley Authority: Assessment of the 10-Year Business Plan* (GAO/AIMD-99-142, April 30, 1999).

<sup>2</sup>In this report, we use the term "deferred assets" to jointly refer to (1) TVA's deferred nuclear generating units (Bellefonte 1 and 2 and Watts Bar 2), and (2) unamortized regulatory assets and certain other deferred charges. The costs of deferred assets are costs that have been incurred but not yet recovered. In cases where we discuss TVA's deferred nuclear generating units separately, we refer to them as deferred nuclear units.

<sup>3</sup>Stranded costs can generally be defined as costs that become uneconomical to recover through rates due to regulatory changes. They arise in competitive markets as a result of uneconomic assets, the costs of which are not recoverable at market rates.

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## Results in Brief

TVA has reduced its debt by about \$1.4 billion over the first 3 years of its 1997 10-year business plan. By reducing debt, and refinancing some debt at lower interest rates, TVA has reduced its annual interest expense from about \$2.0 billion in fiscal year 1997 to about \$1.7 billion in fiscal year 2000. However, TVA continues to fall behind schedule in meeting its debt reduction goal, and consequently is revising this goal. Through the first 3 years of the plan, TVA's debt reduction shortfall was about \$1.4 billion and is expected to be even higher by 2007. In 1997, TVA projected a debt balance of about \$13.2 billion by September 30, 2007. Currently, TVA officials estimate that its outstanding debt by September 30, 2007, will be between \$18 billion and \$24 billion, with a target of about \$19.6 billion—or about \$6.4 billion higher than TVA envisioned when it issued the 1997 plan. Assuming it reaches the \$19.6 billion target and its average interest rate does not change, we estimate that TVA's interest expense in the year 2008 will be about \$416 million more than if it had reduced debt to \$13.2 billion. TVA is not projecting a debt reduction target beyond 2007. The revision to the debt reduction goal is due primarily to lower revenues than projected in 1997, and to the use of cash originally targeted for debt reduction to instead pay for greater than anticipated annual operating expenses and capital expenditures for new generating capacity and environmental controls.

TVA has also made progress in recovering the costs of its deferred assets. TVA's recovery of the costs of its deferred assets, in total, is on schedule; it has recovered about \$1.1 billion over the first 3 years, as planned. However, since issuing its 1997 plan, TVA has added other deferred assets totaling about \$600 million, some of which will have to be recovered through rates in the future. In addition, TVA is revising downward its goal for deferred asset recovery over the remaining years covered by the plan. Its proposed revision to the 10-year plan changes the estimate for the balance of deferred assets outstanding by September 30, 2007, to about \$3.9 billion, up from the \$500 million envisioned in the 1997 plan. Projected increases in operating and other expenses will delay recovery of the costs of TVA's deferred assets.

Since issuing its 10-year plan, TVA's financial condition has improved, but still compares unfavorably to likely competitors. TVA continues to have relatively high debt and financing costs. For example, for fiscal year 1999, 28 cents of every revenue dollar earned by TVA went to pay its fixed financing costs compared to about 9 cents on average for its likely competitors. Similarly, TVA's unrecovered costs associated with its deferred capital assets are relatively high. As a result of its relatively high

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financing costs associated with its high debt, and its deferred assets, TVA's financial flexibility to respond to financial or competitive challenges is less than that of its likely competitors. Although facing these financial disadvantages, TVA currently enjoys certain competitive advantages because of its ties to the federal government as a wholly owned government corporation; these advantages may not exist in the future.

Because it has incurred costs that might not be recoverable in a competitive environment, TVA could have stranded costs if Congress enacts legislation that requires TVA to compete with other electricity providers. Stranded costs could result if TVA were unable to recover all its costs when selling power at or below market rates. TVA's potential for stranded costs relates to its deferred assets—particularly the \$6.3 billion in costs for three nuclear units that are not operational and thus generate no revenue—and high debt, which totaled about \$26 billion as of September 30, 2000. If TVA enters a competitive environment with relatively high debt service costs, its ability to price its power competitively could be jeopardized, thus increasing its potential for stranded costs. TVA's competitive challenge would be even greater if it were at the same time attempting to recover costs of deferred assets, including the deferred nuclear units, through rates.

TVA, in a letter from its Chief Financial Officer, disagreed with our findings in three areas. TVA's comments related to differing opinions about the future market price of electricity, financial comparisons of TVA to other utilities that are its likely competitors, and the relationship between TVA's deferred assets and stranded costs. We continue to believe that our findings are appropriate. Therefore, we made no substantive changes to our report in response to TVA's comments, but did make certain changes for clarification purposes. TVA's comment letter is reproduced in appendix III and our detailed evaluation of TVA's comments is at the end of this letter.

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## Background

Under the TVA Act of 1933 (TVA Act), as amended, TVA is not subject to most of the regulatory and oversight requirements that commercial electric utilities must satisfy. The Act vests all authority to run and operate TVA in its three-member board of directors. Legislation also limits competition between TVA and other utilities. The TVA Act was amended in 1959 to establish what is commonly referred to as the TVA "fence," which prohibits TVA, with some exceptions, from entering into contracts to sell power outside the service area that TVA and its distributors were serving on July 1, 1957.

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In addition, the Energy Policy Act of 1992 (EPAct) provides TVA with certain protections from competition, called the “anti-cherry picking” provisions. Under EPAct, TVA is exempt from having to allow other utilities to use its transmission lines to transmit (“wheel”) power to customers within TVA’s service area. This legislative framework generally insulates TVA from direct wholesale competition. As a result, TVA remains in a position similar to that of a regulated utility monopoly.<sup>4</sup>

EPAct’s requirement that utilities use their transmission lines to transmit wholesale electricity for other utilities has enabled wholesale customers to obtain electricity from a variety of competing suppliers, thus increasing wholesale competition in the electric utility industry across the United States. In addition, restructuring efforts in many states have created competition at the retail level. If, as expected, retail restructuring continues to occur on a state-by-state basis over the next several years, then industrial, commercial, and, ultimately, residential consumers will be able to purchase their power from one of several competitors rather than from one utility monopoly.

Since EPAct exempts TVA from having to transmit power from other utilities to customers within its territory, TVA has not been directly affected by the ongoing restructuring of the electric utility industry to the same extent as other utilities. However, if the Congress were to eliminate TVA’s exemption from the wheeling provision of EPAct, its customers would have the option of purchasing their power from other sources after their contracts with TVA expire. Under the Clinton administration’s proposal in April 1999 to promote retail competition in the electric power industry, which TVA supported, TVA’s exemption from the wheeling provision of EPAct would have been eliminated after January 1, 2003. If this or a similar proposal is enacted, TVA may be required to use its transmission lines to transmit the power of other utilities for consumption within its service territory. A balancing factor is that recent proposals would have also removed the statutory restrictions that prevent TVA from selling wholesale power outside its service territory.

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<sup>4</sup>However, TVA is subject to some forms of indirect competition. For example, TVA has no protection against its industrial customers relocating outside its service area or businesses deciding not to move to its service area for reasons related to the cost of power. In addition, customers can decide to generate their own power.



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Because of these ongoing restructuring efforts, TVA management, like many industry experts, expects that in the future TVA may lose its legislative protections from competition. TVA's management recognized the need to act to better position TVA to compete in an era of increasing competition and, in July 1997, issued a 10-year business plan with that goal in mind. TVA established a 10-year horizon because a majority of its long-term contracts with distributors could begin expiring at that time, and TVA could be facing greater competitive pressures by 2007. The plan contained three strategic objectives: reduce TVA's cost of power in order to be in a position to offer competitively priced power by 2007, increase financial flexibility by reducing fixed costs, and build customer allegiance.

To help meet the first two strategic objectives noted above, one of the key goals of TVA's 10-year plan was to reduce debt from its 1997 levels by about one-half, to about \$13.2 billion. In addition, while not specifically discussed in the published plan, TVA planned to reduce the balance (i.e., recover the costs through rates) of its deferred assets from about \$8.5 billion to \$500 million, which TVA estimated to be the net realizable value of its deferred nuclear units. TVA planned to generate cash that could be used to reduce debt by increasing rates beginning in 1998, reducing expenses, and limiting capital expenditures; these actions would increase its financial flexibility and future competitiveness. TVA's plan to reduce debt and recover the costs of deferred assets while it is still legislatively protected from competition was intended to help position TVA to achieve its ultimate goal of offering competitively priced power by 2007. In a competitive market, if TVA's power were priced above market because of high debt service costs and the recovery through rates<sup>5</sup> of the costs of its deferred assets, it would be in danger of losing customers. Losing customers could result in stranded costs if TVA is unable to sell the capacity released by the departing customers to other customers for at least the same price. Stranded costs, as discussed later, are costs that are uneconomical to recover in a competitive environment due to regulatory changes.

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<sup>5</sup>As discussed later, if TVA were to be required to compete with other utilities and it had not recovered the costs of its deferred assets, TVA might immediately write off all or a portion of the costs to retained earnings. To the extent that TVA instead takes the costs into future rates, there would be upward pressure on rates that would diminish TVA's competitive prospects.

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## Objectives, Scope, and Methodology

For each of the three objectives addressed in this report, you asked us to answer specific questions. Regarding debt and deferred assets, you asked us to determine what progress TVA has made in achieving the goals of its 10-year business plan for reducing debt and deferred assets, and to what extent TVA has used the additional revenues generated from its 1998 rate increase to reduce debt and deferred assets. Regarding TVA's financial condition, you asked us to compare TVA's financial condition, including debt and fixed cost ratios, to neighboring investor-owned utilities (IOUs). Finally, regarding stranded costs, you asked us to (1) explain the link between TVA's debt and its potential stranded costs, (2) determine whether TVA has calculated potential stranded costs for any of its distributors, and if so, determine the methodology it used, and (3) determine the options for recovering any potential stranded costs at TVA.

We evaluated the progress TVA has made in achieving the debt reduction and recovery of deferred assets goals of its 10-year plan, and determined the extent to which TVA is using revenue from its 1998 rate increase to reduce debt and recover the cost of its deferred assets, by interviewing TVA and Congressional Budget Office (CBO) officials; reviewing and analyzing various TVA reports and documents, including annual reports, audited financial statements, the original 10-year business plan and proposed revisions to it; and reviewing supporting documentation (analytical spreadsheets, etc.) and assumptions underlying TVA's 10-year plan.

To determine TVA's financial condition, we analyzed TVA's debt and fixed costs, and then compared TVA to its likely competitors. To accomplish this, we obtained financial data for TVA and its likely competitors from their audited financial statements; computed and compared key financial ratios for TVA and its likely competitors; analyzed data on the future market price of power; interviewed TVA officials about their efforts to position themselves competitively, including their efforts to reduce debt, recover the cost of their deferred assets, and mitigate and/or recover stranded costs; and reviewed IOU annual reports to determine what steps the IOUs are taking to financially position themselves for competition.

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To assess TVA's potential stranded costs, we interviewed industry experts at the Federal Energy Regulatory Commission (FERC),<sup>6</sup> Edison Electric Institute (EEI),<sup>7</sup> and CBO on the options other utilities have pursued to recover stranded costs; reviewed Energy Information Administration (EIA)<sup>8</sup> documents on stranded cost recovery at the state level; questioned TVA officials on TVA's plans for calculating and recovering potential stranded costs; and analyzed TVA's contracts to determine whether TVA has contractually relieved its customers of any obligation to pay for any stranded costs. Also, to determine the link between TVA's debt and its potential stranded costs, we analyzed the interrelationship between debt reduction and stranded cost mitigation. Additional information on our scope and methodology is in appendix I.

We conducted our review from April 2000 through January 2001 in accordance with generally accepted government auditing standards. To the extent practical, we used audited financial statement data in performing our analyses, or reconciled the data we used to audited financial statements; however, we were not able to do so in all cases and we did not verify the accuracy of all the data we obtained and used in our analyses. In addition, we based information on debt reduction, deferred asset recovery, and the future market price of power on TVA's planned revisions to its key goals and assumptions at the time of our review. We requested written comments from TVA on a draft of this report. TVA provided both technical comments, which we have incorporated, as appropriate and written comments, which are reproduced in appendix III.

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<sup>6</sup>FERC is an independent agency within the Department of Energy with broad regulatory authority over the interstate transmission and sale of wholesale electricity, natural gas, and oil.

<sup>7</sup>EEI is the industry group for investor-owned utilities.

<sup>8</sup>EIA is a statistical and analytical agency in the Department of Energy.

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## TVA's Schedule for Reducing Debt and Recovering Deferred Assets Is Slipping

In April 1999,<sup>9</sup> we reported that capital expenditures not accounted for in the 1997 plan would negatively impact TVA's ability to achieve its plans to reduce debt and recover the cost of deferred assets by 2007. At that time, TVA's fiscal year 2000 federal budget request acknowledged that TVA would not achieve its goal of reducing outstanding debt by about half until 2009, 2 years later than originally planned. TVA's goal in its original plan was to reduce debt to about \$13.2 billion. Since April 1999, TVA has fallen further behind in meeting its debt reduction goal. TVA now has a target of reducing debt to \$19.6 billion by 2007; it no longer is projecting a target for debt reduction beyond 2007.

For fiscal years 1998 through 2000, TVA reduced its debt by about \$1.4 billion. However, TVA's debt reduction shortfall also totaled about \$1.4 billion, which resulted from greater than anticipated capital expenditures and annual operating and other expenses and lower revenues than projected in 1997. These same factors will hamper TVA's debt reduction efforts over the last 7 years of the plan.

In addition, although TVA reduced deferred assets to the extent planned for the first 3 years of the plan, it is revising the amount of deferred assets it plans to recover through 2007 downward. TVA now plans to reduce the balance of its deferred assets to about \$3.9 billion by September 30, 2007, compared to its original goal of \$500 million.

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## Annual Debt Reduction Is Behind Schedule and Overall Goal Is Being Revised Downward

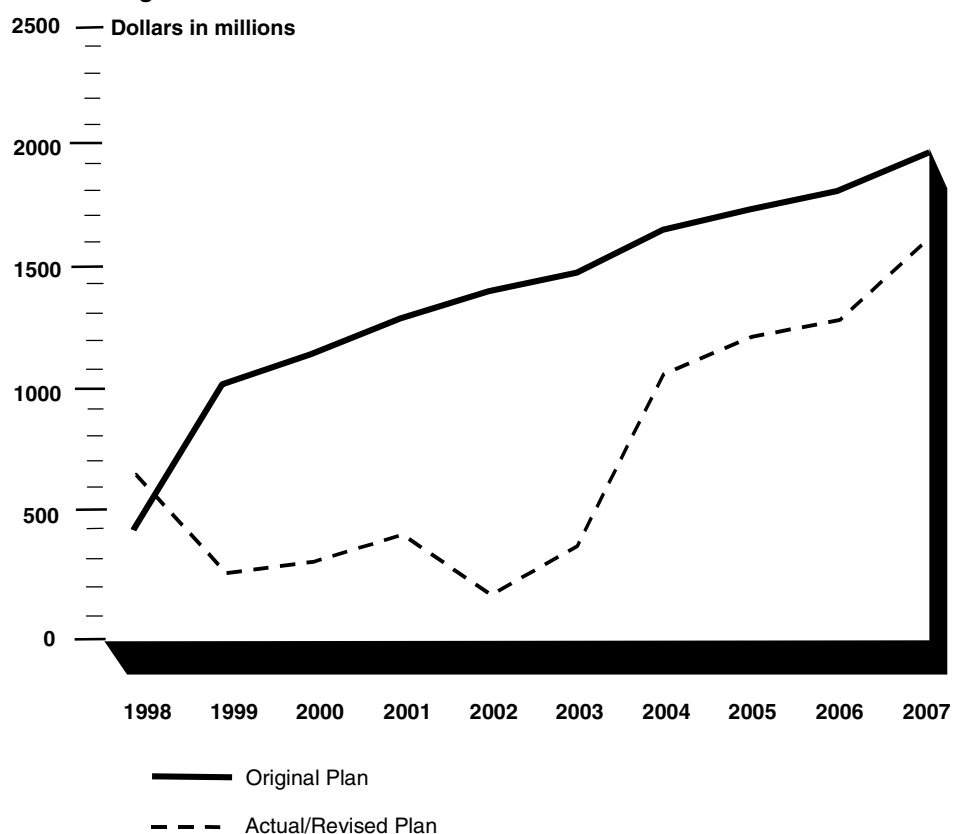
To achieve the overall debt reduction goal in the original 10-year plan, TVA established annual debt reduction goals. In the 1997 plan, the annual debt reduction goals ranged from \$476 million in 1998 to \$2 billion in 2007. TVA has made progress in reducing debt, and in fact, exceeded its target goal in the first year of the plan. However, TVA fell far short in the second and third years. Through the first 3 years of the 10-year plan, TVA reduced debt by about \$1.4 billion, but its debt reduction shortfall also totaled about \$1.4 billion. In addition, TVA is now planning to issue a revised plan that would significantly reduce the goals for 2001 through 2007. Figure 1 compares the annual debt reduction goals contained in TVA's July 1997 10-year plan to TVA's actual debt reduction for fiscal years 1998 through

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<sup>9</sup>Tennessee Valley Authority: Assessment of the 10-Year Business Plan (GAO/AIMD-99-142, April 30, 1999).

2000 and to TVA's proposed revisions to its annual debt reduction goals for fiscal years 2001 through 2007.

**Figure 1: Annual Debt Reduction Goals in TVA's 1997 Plan Compared to Actual Debt Reduction for Fiscal Years 1998 Through 2000 and Proposed Goals for Fiscal Years 2001 Through 2007**

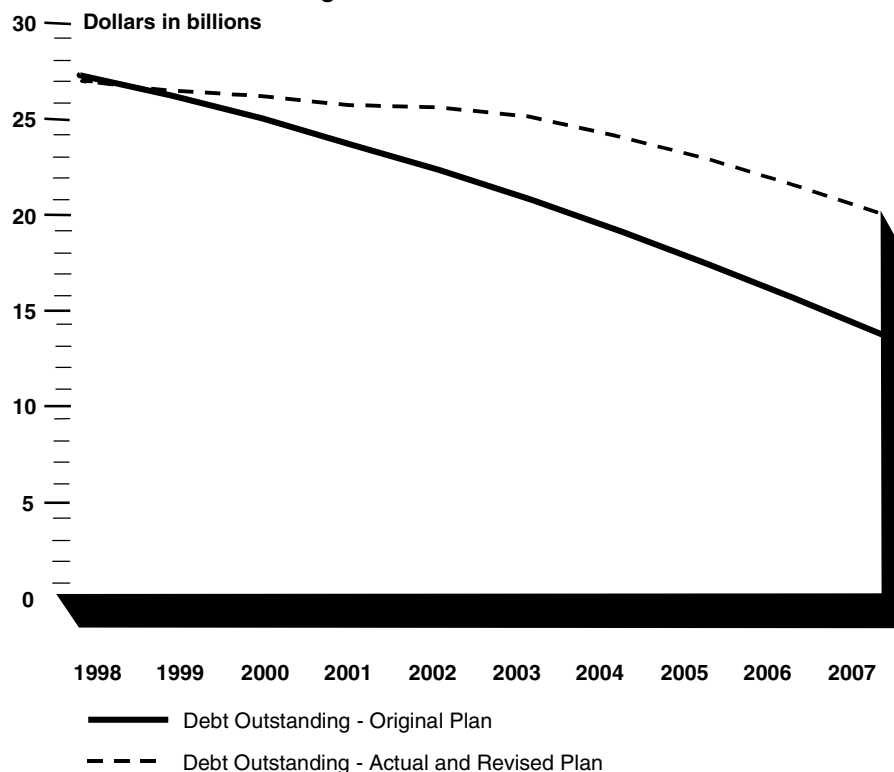


Source: GAO analysis based on data from TVA.

In its presidential budget submission for fiscal year 2000, TVA acknowledged that it would not achieve its goal of reducing debt by about one-half by 2007. Instead, TVA said it would not meet the debt reduction goal until 2009, 2 years later than the goal in its original 10-year plan. TVA is in the process of revising its goal for reducing outstanding debt again. TVA officials now estimate that its outstanding debt by September 30, 2007, will be between \$18 billion and \$24 billion, with a target of about \$19.6 billion, or about \$6.4 billion higher than TVA envisioned when it issued the 1997

plan. TVA is not projecting a target reduction goal beyond 2007. Figure 2 compares the annual outstanding debt goals contained in TVA's July 1997 10-year plan to TVA's actual debt outstanding for fiscal years 1998 through 2000 and to TVA's proposed revisions to annual goals for fiscal years 2001 through 2007.

**Figure 2: Annual Outstanding Debt Goals in TVA's 1997 Plan Compared to Actual Debt Outstanding for Fiscal Years 1998 Through 2000 and Proposed Annual Goals for Fiscal Years 2001 Through 2007**



Source: GAO analysis based on data from TVA.

TVA officials attribute the \$1.4 billion debt reduction shortfall over the first 3 years to four factors. The first factor is greater than anticipated cash expenditures for new generating capacity. For fiscal years 1998 through 2000, TVA spent \$436 million more than planned to purchase new peaking generator units. The 1997 plan assumed that TVA would meet future increases in demand for power by purchasing power from other utilities, which would have used less cash through 2007 than purchasing the peaking

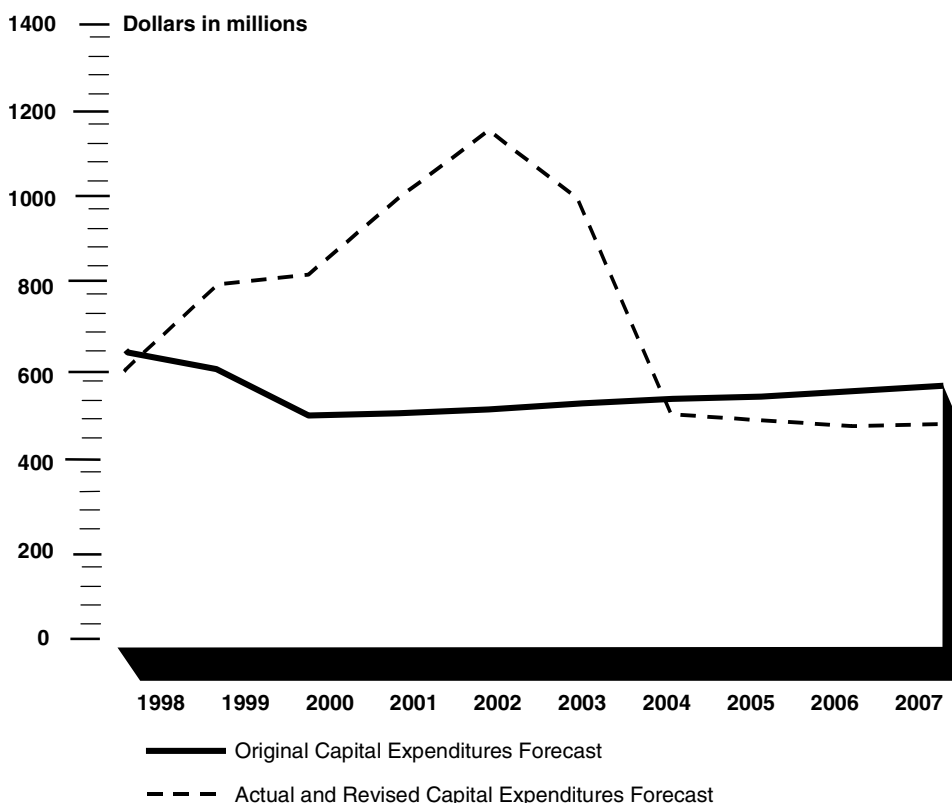
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units. TVA officials believe that its capital expenditures for new generating capacity will have two positive effects. First, they believe the new generating capacity will ultimately reduce TVA's cost of power, even though the increased capital expenditures will use cash that could have been used to reduce debt. Second, they believe the new generating capacity will enhance system reliability by providing a dependable source of power.

The second factor to which TVA officials attribute the debt reduction shortfall over the first 3 years of the plan is greater than anticipated capital expenditures requiring cash for environmental controls to meet Clean Air Act requirements. For fiscal years 1998 through 2000, TVA spent \$276 million more than planned on environmental controls. Meanwhile, over the 3-year period, TVA spent about \$221 million less than planned on other types of capital items.

The net effect of increased spending on new generating capacity and environmental controls and decreased spending on other types of capital items is that TVA's capital expenditures have exceeded the planned amount. TVA had forecast about \$1.7 billion in capital expenditures over that 3-year period; its actual capital expenditures were almost \$500 million more (about \$2.2 billion). Under current plans, TVA expects its major capital costs for new generating capacity and environmental controls to be completed by 2004. Figure 3 compares the annual capital expenditure goals contained in TVA's July 1997 10-year plan to TVA's actual capital expenditures for fiscal years 1998 through 2000 and to TVA's proposed revisions to annual goals for fiscal years 2001 through 2007.

**Figure 3: Annual Capital Expenditure Goals in TVA's 1997 Plan Compared to Actual Capital Expenditures for Fiscal Years 1998 Through 2000 and Proposed Annual Goals for Fiscal Years 2001 Through 2007**



Source: GAO analysis based on data from TVA.

The third factor to which TVA officials attribute the debt reduction shortfall over the first 3 years of the plan is a net increase in annual expenses requiring cash that could have been used for debt reduction. For fiscal years 1998 through 2000, TVA's operating and maintenance expenses, and sales, general, and administrative expenses were greater than anticipated. This increase in annual expenses was partially offset by a reduction in fuel and purchased power expense<sup>10</sup> and interest expense. The net effect was that annual expenses totaled about \$122 million more than planned.

<sup>10</sup>TVA's revised plan anticipates higher prices for natural gas and for electricity purchased from other utilities. However, this is partially offset by TVA's plans to buy less electricity from others.



The fourth factor to which TVA officials attribute the debt reduction shortfall over the first 3 years of the plan is less revenue than originally anticipated. According to TVA officials, the revenue shortfall was caused primarily by mild winters that lessened demand for electricity. The revenue shortfall for fiscal years 1998 through 2000 totaled about \$725 million.

Our analysis confirms that the above four factors were the primary ones that hampered TVA's debt reduction efforts for fiscal years 1998 through 2000. These factors are also projected to limit TVA's ability to reduce debt in fiscal years 2001 through 2007. Over this 7-year period, the primary factors limiting TVA's debt reduction efforts are that annual revenue is expected to be lower, and capital expenditures and cash expenses are expected to be higher. This reduces the amount of cash that would have been available to repay debt. TVA now anticipates that its revenue will be about \$2.2 billion lower, and its capital expenditures and cash expenses—at about \$1.6 billion and \$2.5 billion, respectively—will be higher than planned in 1997. Table 1 shows our analysis of the factors affecting cash available to reduce debt from 1998 through 2007.

**Table 1: Factors Affecting Cash Available for Debt Reduction From 1998 Through 2007**

(Dollars in Billions)	
Source	Amount
Decrease in revenue	\$(2.2)
Increase in capital expenditures	(1.6)
Decrease in fuel and purchased power expense	1.2
Increase in other operating and maintenance expense	(3.1)
Increase in interest expense	(1.3)
Decrease in other uses of cash	0.6
<b>Total reduction in cash available to reduce debt</b>	<b>\$(6.4)</b>

Note: Figures in parentheses denote factors that reduced the amount of cash available for debt reduction.

Source: GAO analysis based on data from TVA.

In developing its 10-year plan, TVA planned to use the additional revenue from its 1998 rate increase to reduce its debt. TVA officials attribute about an additional \$1.24 billion in revenue over the first 3 years of the plan to the rate increase. During this period, TVA has reduced its outstanding debt by more than a comparable amount—about \$1.4 billion.

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## Plan to Recover Deferred Assets Is Being Revised Downward

A key element of TVA's plan was not only to reduce the cost of its power by reducing its debt and the corresponding interest expense, but also to recover a substantial portion of the costs of its deferred assets. By increasing operating revenues and reducing interest and other expenses to generate cash flow that could be used to reduce debt, TVA would have the opportunity<sup>11</sup> to use revenues in excess of expenses to recover a portion of the costs of its deferred assets. However, as noted previously, the proposed revision to the plan contains additional operating and other expenses over the remainder of the 10-year period, which, absent any future rate increases, will decrease the amount of revenue available to recover deferred assets. TVA has also added about \$600 million in deferred assets, some of which will have to be recovered in the future.<sup>12</sup> Although TVA recovered the costs of deferred assets to the extent planned over the first 3 years of the plan, it is reducing its overall deferred asset recovery goals through 2007.

TVA has a significant amount of unrecovered capital costs associated with three uncompleted and nonproducing deferred nuclear units—about \$6.3 billion as of September 30, 2000.<sup>13</sup> At that time, TVA's investment in its deferred nuclear units represented about 26 percent of the cost of TVA's total undepreciated generating property, plant, and equipment. The deferred units do not generate power, and TVA has chosen not to begin to recover their costs through rates. In contrast, the unrecovered costs of TVA's operating nuclear plants, which produced about 31 percent of TVA's power in 2000, represented about 45 percent of the cost of TVA's total undepreciated generating assets as of September 30, 2000.

At the time TVA issued the original 10-year business plan, the unrecovered balance of TVA's deferred assets, including both its nuclear units and other deferred assets, was about \$8.5 billion. TVA recovered the cost of deferred

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<sup>11</sup>The original 10-year plan called for TVA to raise rates and reduce expenses in order to generate the cash needed to reduce debt. The TVA Act requires TVA to generate sufficient revenues to recover all costs and allows but does not require TVA to make a profit. Therefore, TVA could use revenues in excess of expenses to begin recovering the costs of its deferred nuclear units and accelerate the recovery of its other deferred charges.

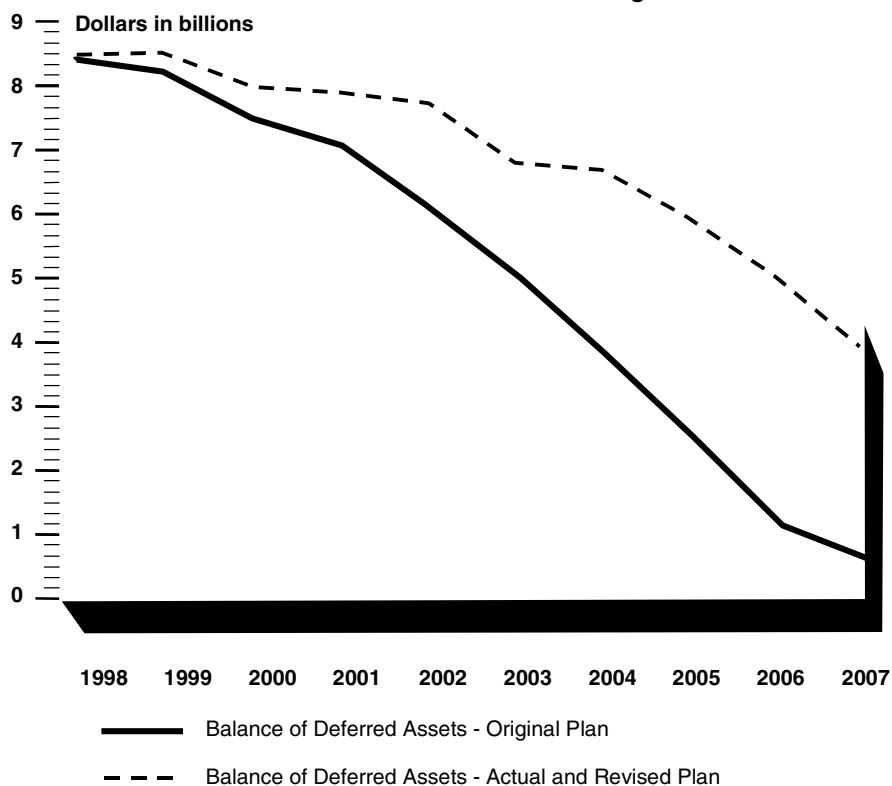
<sup>12</sup>A portion of the increase in deferred assets is attributable to an increase in nuclear decommissioning costs. TVA believes it will recover all of these costs through earnings on its related trust fund portfolio; to the extent it does so, it will not have to recover these costs through rates.

<sup>13</sup>There are two uncompleted nuclear generating units at Bellefonte and one at Watts Bar.

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assets to the extent planned for over the first 3 years of the plan. Through September 30, 2000, \$1.1 billion in other deferred assets had been recovered through rates, but recovery of the cost of the deferred nuclear units had not begun. However, since the original plan was issued, TVA has also added about \$600 million in other deferred assets, some of which will have to be recovered in the future; its current total is about \$8 billion. TVA's overall plan for recovering the costs of its deferred assets through 2007 is being reduced significantly. TVA now plans to reduce the balance of its deferred assets, including both its nuclear units and other deferred assets, to about \$3.9 billion; this represents much less deferred asset recovery than TVA's original estimate of \$500 million. Figure 4 compares the annual estimated remaining balances of deferred assets (both the deferred nuclear units and other deferred assets) contained in TVA's July 1997 10-year plan to TVA's actual deferred asset balances as of the end of fiscal years 1998 through 2000 and to TVA's estimated balances for fiscal years 2001 through 2007.

**Figure 4: Annual Estimated Balances for Deferred Assets in TVA's 1997 Plan Compared to the Actual Deferred Asset Balances for Fiscal Years 1998 Through 2000 and to Estimated Balances for Fiscal Years 2001 Through 2007**



Source: GAO analysis based on data from TVA.

Not reducing debt and recovering deferred assets to the extent planned by 2007 while still legislatively protected from competition could diminish TVA's future competitive prospects. Specifically, not meeting these goals could cause the price of its future power to be above market, if TVA's debt service costs remain relatively high at the time it is required to compete and if TVA is at the same time attempting to recover the costs of its deferred assets through rates. Assuming that TVA's outstanding debt balance is \$19.6 billion as of September 30, 2007, and its weighted average interest rate<sup>14</sup> remains about 6.5 percent, we estimate that TVA's interest expense in

<sup>14</sup>The weighted average interest rate on TVA's debt outstanding as of September 30, 2000, was about 6.5 percent.

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the year 2008 will be about \$1.27 billion, about \$416 million higher than if debt were reduced to \$13.2 billion. As we stated in our April 1999 report, the more progress TVA makes in addressing these issues while it has legislative protections, the greater its prospects for being competitive if it loses those protections in the future.

Although reducing debt and the amount of deferred asset costs that have not yet been recovered are important to TVA as it prepares for competition, TVA's future competitiveness will be based to a large degree on market conditions and how TVA will be restructured if and when TVA loses its legislative protections. Of particular importance is the uncertainty of the future market price of power. In our 1999 assessment of TVA's 10-year plan, we found that TVA's projection of the future market price of wholesale power in 2007 was somewhat lower than the projections of leading industry experts. This lower projection prompted TVA to be aggressive in its planning to reduce costs to position itself to offer competitively priced power by 2007.

TVA and other industry experts are continuing to revise their projections of the future market price of power in 2007. TVA's projection is a load-shaped forecast—i.e., its projection is based specifically on how TVA's load varies during different hours of the day and different days of the week. TVA officials told us that higher projections are warranted now than when it prepared its plan in 1997 primarily due to projected increases in the price of natural gas, but also due to a combination of other factors, including the extreme volatility of spot prices (in the summer months), increasing power demands beyond what they expected 3 years ago, shortages (or at least, shrinking surpluses) of both generating and transmission capacity, and a better understanding of the increased costs of complying with environmental regulations that are likely to take effect between now and 2007. TVA has stated that the impact of these factors can be seen in higher current trading prices, higher forward prices being offered by suppliers, higher long-term contract prices, and higher energy prices. TVA officials are now forecasting a market price of power in 2007 in the range of 4.0 to 5.0 cents per kilowatthour (kWh), which would be sufficient to cover its projected costs of about 3.8 to 3.9 cents per kWh in 2007. An analysis by Salomon Smith Barney,<sup>15</sup> which extends through 2004, supports TVA's

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<sup>15</sup>Salomon Smith Barney is a financial services firm that, among other things, conducts research on energy issues.

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position that market indicators suggest that the future market price of power will be higher during this part of the plan period.

Not all industry experts agree with TVA's belief that the price of natural gas will necessarily drive electricity prices higher. For example, the Energy Information Administration (EIA) projects a downward price trend (in current dollars) between now and 2007 in the region in which TVA operates, in part due to declining coal prices<sup>16</sup> that EIA projects would more than offset increasing gas prices. EIA also projects that nuclear fuel prices will remain stable. However, when projecting future prices by geographic region, EIA and other industry experts generally forecast the future market price of power on an average yearly price that includes all peaks and valleys. Such average yearly price forecasts are not directly comparable to TVA's load-shaped forecast. Differing forecasts by various industry experts underscore the uncertainty of predicting the future market price of power.

The higher actual market prices are, the better positioned TVA will be to generate revenue that could be used to pay down debt and recover costs, including the costs of deferred assets. However, by increasing its projections for the future market price of power, TVA assumes it can accommodate a higher debt level than originally planned. Because of the uncertainty surrounding whether TVA's projections of higher market prices in 2007 are accurate, TVA's higher debt projections increase the risk that it will not be able to generate the revenue needed to recover all costs or offer competitively priced power at that time. In a competitive environment, these assumptions could increase the federal government's risk of loss due to its financial involvement with TVA.<sup>17</sup>

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<sup>16</sup>EIA projects declining coal prices due to improved productivity in coal mining and growing production from lower-cost mines in the west.

<sup>17</sup>In September 1997 we reported on the risk of loss to the federal government as a result of its indirect and direct financial involvement in TVA (*Federal Electricity Activities: The Federal Government's Net Cost and Potential for Future Losses*, GAO/AIMD-97-110 and 110A, September 19, 1997). The federal government's financial involvement and risk of loss is primarily indirect. For indirect involvement, the federal government is at risk of loss for unreimbursed costs because of any actions it might take to prevent default on the debt service requirements on TVA's outstanding public debt. Although the federal government explicitly does not guarantee TVA's publicly issued debt, the major credit rating agencies rate this debt as if it has an implicit federal guarantee.

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## TVA's Financial Condition Has Improved but Key Financial Indicators Still Compare Unfavorably to Likely Competitors

A key objective of TVA's 1997 plan was to alter its cost structure from a rigid, high fixed-to-variable cost relationship to a cost structure with more financial flexibility that is better able to adjust to a more volatile marketplace. However, while TVA has made positive steps, its financial flexibility remains below that of likely competitors, largely because its debt remains relatively high. Another key objective of TVA's 1997 plan was to reduce its cost of power. One of the components of the cost of power is the recovery of the costs of its capital assets. Similar to improvements in flexibility, while TVA has made some progress in recovering the costs of its capital assets, financial indicators show that TVA has recovered fewer of these costs than its likely competitors.

In 1995<sup>18</sup> we reported that one option available for TVA to improve its financial condition was to raise rates while it is still legislatively protected from competition and use the proceeds to reduce its debt. In 1998, TVA implemented its first rate increase in 10 years. For the previous 10 years, TVA had chosen to keep rates as low as possible rather than generate additional revenue that could have been used to reduce debt. Revenue from TVA's 1998 rate increase has reduced debt (and corresponding interest expense)<sup>19</sup> and recovered some of the costs of deferred assets over the first 3 years of its 10-year plan. From September 30, 1997, through September 30, 2000, TVA reduced its debt from about \$27.4 billion to about \$26.0 billion. This debt reduction, along with the refinancing of debt at lower interest rates, enabled TVA to reduce its annual interest expense from about \$2.0 billion in fiscal year 1997 to about \$1.7 billion in fiscal year 2000. In addition, TVA has recovered about \$1.1 billion of its deferred assets through rates. While not reducing debt and recovering the costs of deferred assets to the extent anticipated in its original plan, these actions are important because they are a step toward giving TVA more financial flexibility to adjust its rates in a competitive environment.

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<sup>18</sup> *Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability* (GAO/AIMD/RCED-95-134, August 17, 1995).

<sup>19</sup> TVA has reduced its interest expense not only by repaying debt but also by refinancing debt at lower interest rates. In fiscal year 1999, TVA obtained authority from the Congress to prepay, without penalty, the \$3.2 billion that TVA then owed the Federal Financing Bank; it then refinanced that debt at lower interest rates. In our 1999 report, we estimated that the interest savings from this refinancing would provide an average annual savings of about \$116 million. TVA has also refinanced other debt.

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## TVA's Financial Flexibility Remains Relatively Low

To assess the progress TVA has made in achieving its key objective of altering its cost structure from a rigid, high fixed-to-variable cost relationship to a cost structure with more financial flexibility, and to put TVA's financial condition in perspective, we compared TVA to likely competitors<sup>20</sup> in terms of (1) total financing costs, (2) fixed financing costs, and (3) net cash generated from operations as a percentage of expenditures for property, plant, and equipment and common stock dividends. These ratios are indicators of TVA's flexibility to withstand competitive or financial challenges. To assess TVA's financing costs<sup>21</sup> compared to these competitors, we computed the total financing costs to revenue ratio, which is the percentage of an entity's operating revenue that is needed to cover all of its financing costs. A lower percentage indicates greater flexibility to respond to financial or competitive challenges. Financing costs for TVA, which consist of the interest expense on its outstanding debt and payments made to the federal government as returns on past appropriations,<sup>22</sup> are fixed costs in the short term that must be paid even in times of financial or competitive difficulty. In contrast, for the IOUs, financing costs include preferred and common stock dividends in addition to interest expense, because part of the IOUs' capital is derived from preferred and common stock and dividends represent the cost of this equity capital. Figure 5 shows that TVA's total financing costs, although improved since 1994, remain high when compared to those of likely competitors.

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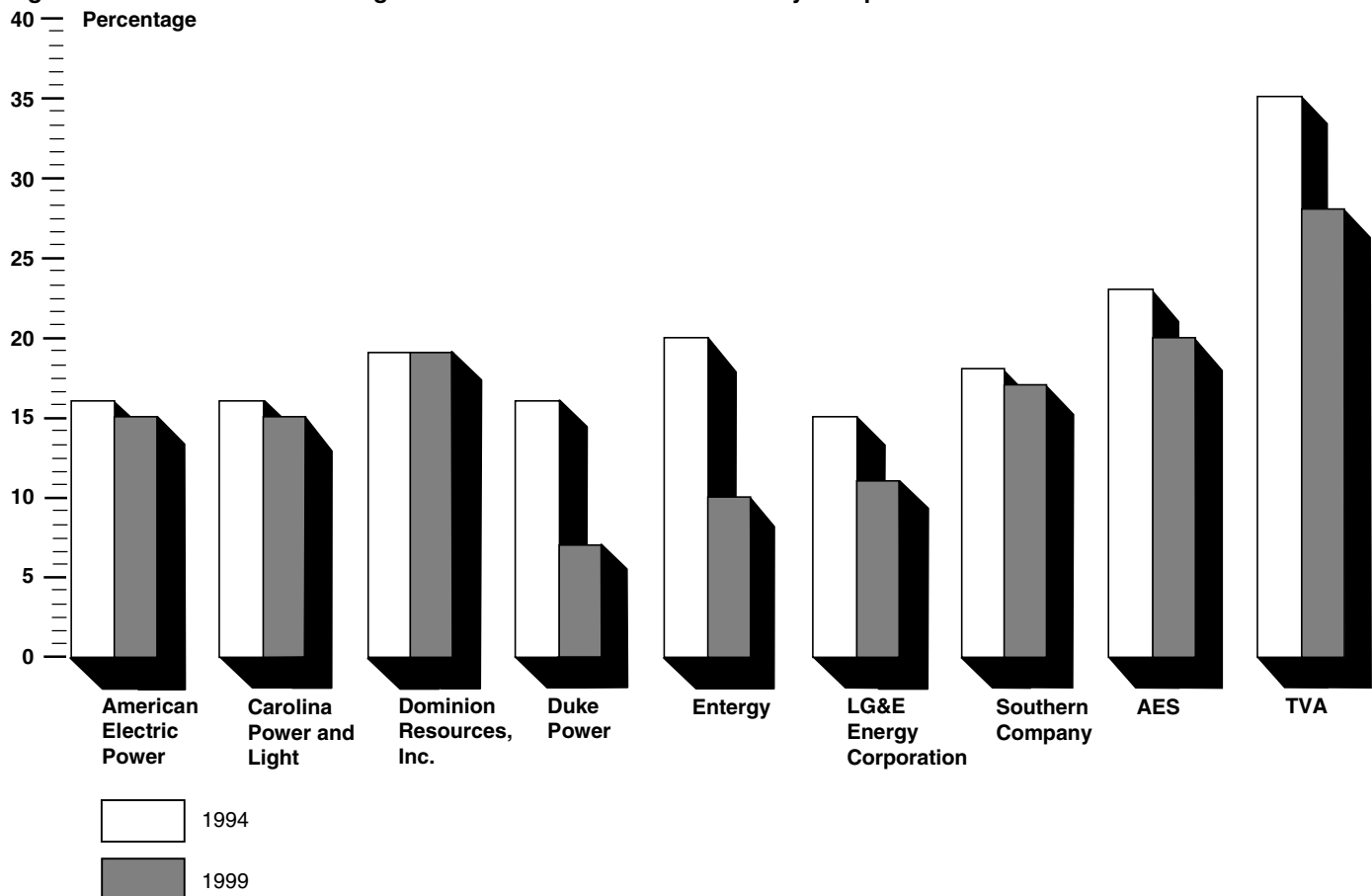
<sup>20</sup>According to industry experts, TVA's competition is most likely to come from nearby entities because of the high cost of transmitting power. Our analysis used seven utilities that border on TVA's service territory that are used by analysts to compare TVA to other electric utilities, and one large independent power producer; we refer to these entities generically as IOUs. TVA could face competition from other sources, including utilities that do not border on TVA's service area, power marketers, and other independent power producers.

<sup>21</sup>Differences in financing structures between TVA and likely private sector competitors make direct comparisons somewhat difficult. Specifically, financing costs include (1) interest expense on short-term and long-term debt (both TVA and IOUs), (2) returns on appropriation investment (TVA only), and (3) preferred and common stock dividends (IOUs only). In addition, IOUs are organized as tax-paying businesses and are usually financed by the sale of securities in the free market and by issuing debt, while TVA's capital is derived primarily from debt. The requirement that TVA obtain financing by issuing debt could be considered a competitive disadvantage because of the corresponding fixed financing costs which reduce TVA's financial flexibility. We performed analyses which take into effect these differences in financial structure.

<sup>22</sup>The 1959 amendments to the TVA Act require TVA to make annual principal payments to Treasury from net power proceeds plus a market rate of return on the balance of this debt. The latter is the payment on appropriations.



**Figure 5: Ratio of Total Financing Costs to Revenue for TVA and Likely Competitors for Fiscal Years 1994 and 1999**

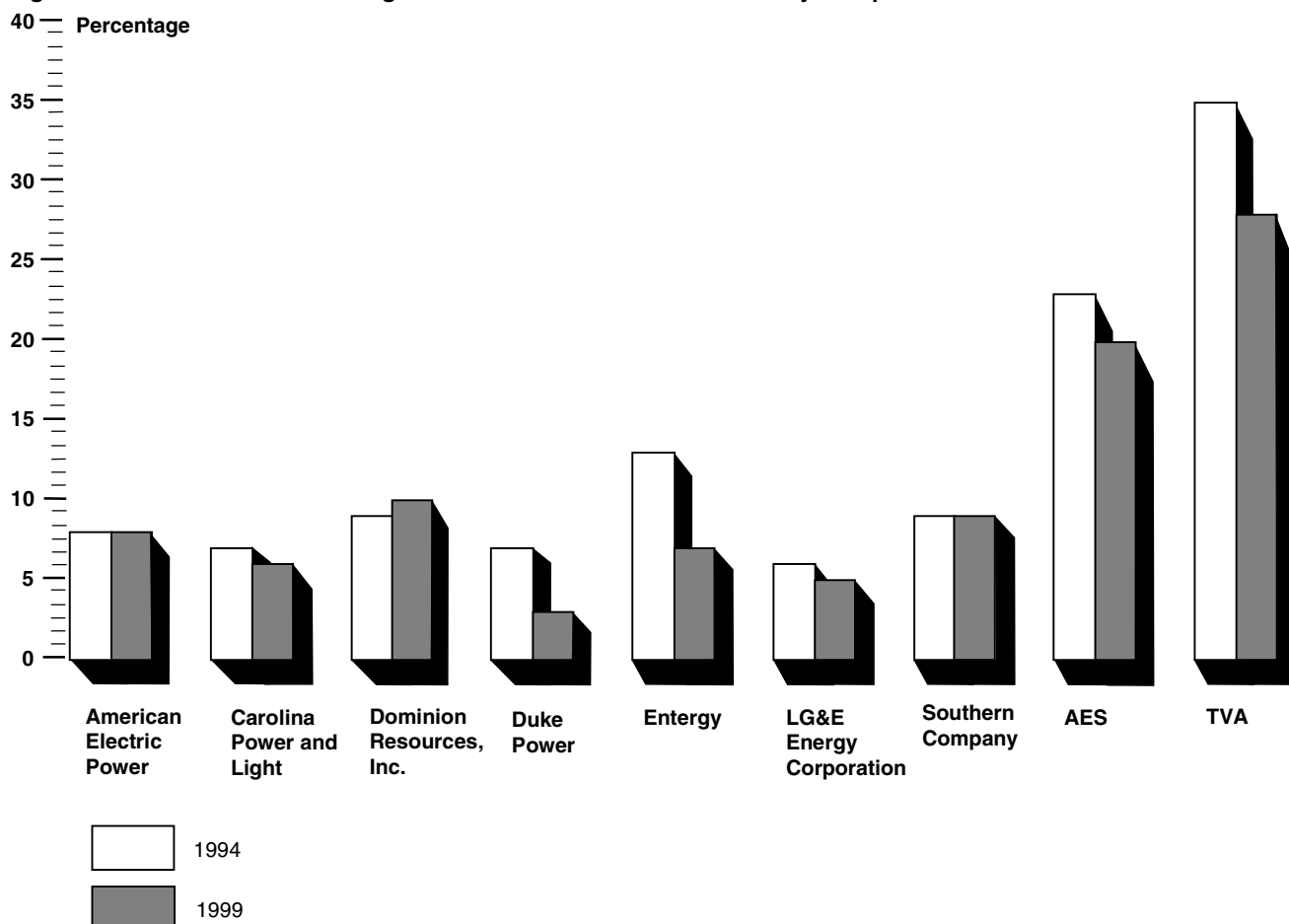


Source: GAO analysis based on entity annual reports.

Next, we computed the fixed financing costs to revenue ratio, which indicates the percentage of operating revenues needed to cover the fixed portion of the financing costs. For this ratio, we excluded the common stock dividends paid by IOUs because these are not contractual obligations that must be paid. They can be reduced—or even suspended in extreme cases—to allow an entity to respond to financial or competitive challenges. As with the total financing costs to revenue ratio, the lower the percentage of the fixed financing costs to revenue, the greater the financial flexibility of the entity. Figure 6 shows that, while TVA has made progress since 1994, its fixed financing costs remain high compared to those of likely competitors. For example, for fiscal year 1999, 28 cents of every revenue

dollar earned by TVA went to pay for fixed financing costs<sup>23</sup> compared to about 9 cents on average for its likely competitors.

**Figure 6: Ratio of Fixed Financing Costs to Revenue for TVA and Likely Competitors for Fiscal Years 1994 and 1999**



Source: GAO analysis based on entity annual reports.

Another key indicator of financial flexibility is the ratio of net cash from operations (i.e., cash in excess of operating and interest expenses) to expenditures for property, plant, and equipment (PP&E) and common

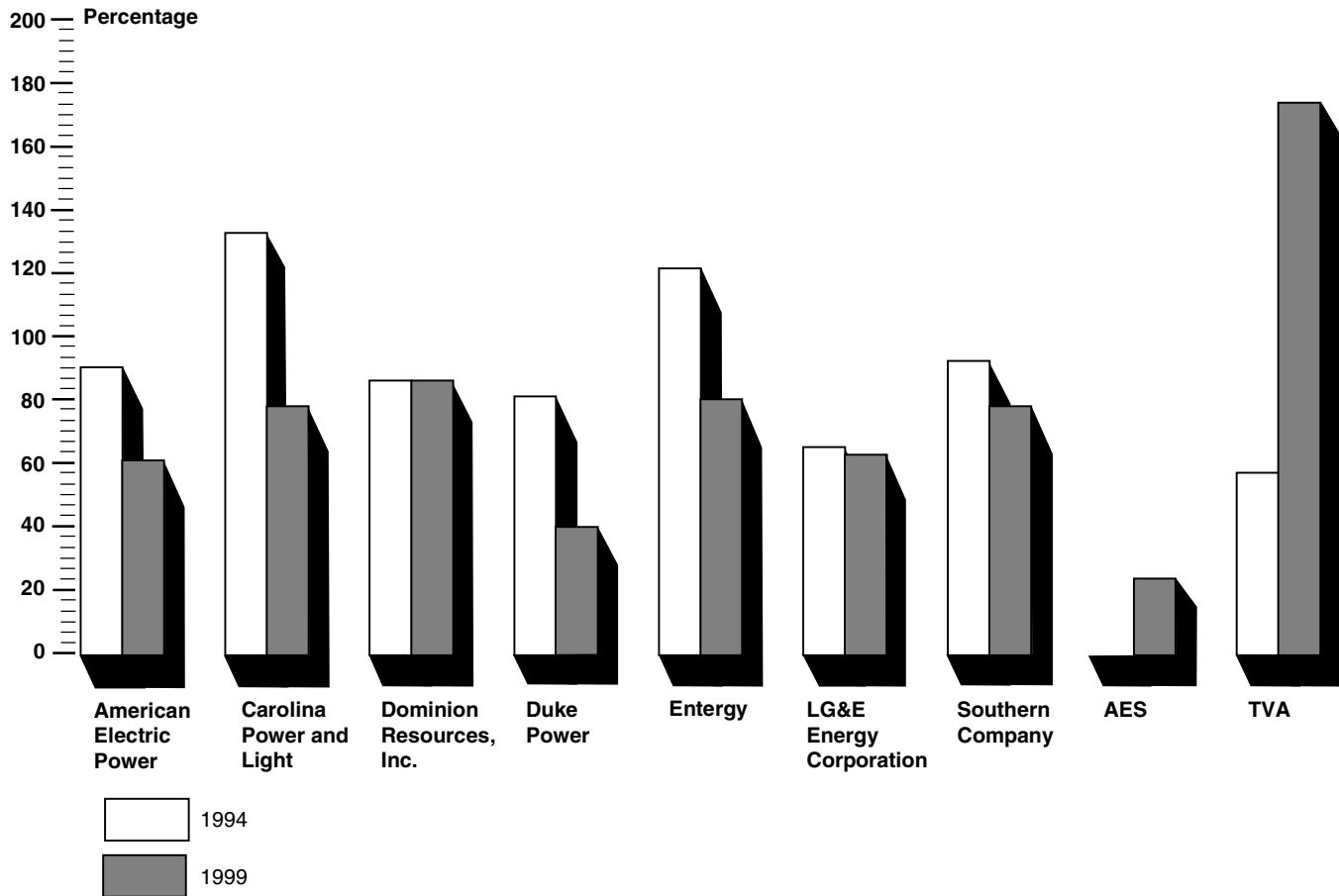
<sup>23</sup>TVA has further reduced this to about 26 cents of every revenue dollar for fiscal year 2000.

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stock dividends. This net cash in effect represents the amount available for management's discretionary use. A percentage of 100 would indicate sufficient net cash provided by operations to pay for 100 percent of annual PP&E expenditures and common stock dividends. By necessity, utilities that are unable to pay for capital expenditures from net cash are forced to pay for them through retained earnings or by borrowing funds or issuing stock. Issuing debt to cover capital expenditures increases a utility's cost of power by requiring annual interest payments, and issuing stock could also increase the cost of power through the payment of dividends. Since TVA does not pay dividends, its ratio only includes expenditures for PP&E.

A higher percentage indicates greater flexibility. Because of increased revenue from TVA's recent rate increase, a significant reduction in annual capital expenditures for its nuclear power program, and cost control measures that reduced certain expenses, TVA's ratio has improved significantly and now compares favorably to those of likely competitors. Figure 7 illustrates the improvement TVA has made to date compared to likely competitors.

**Figure 7: Ratio of Net Cash From Operations to Expenditures for PP&E and Common Stock Dividends for TVA and Likely Competitors<sup>a</sup> for Fiscal Years 1994 and 1999**



<sup>a</sup>We did not include the 1994 ratio for AES in figure 7 because this ratio was significantly higher than the other utilities (about 1,700 percent) and the scale that would have been needed to include it would have visually distorted the differences among the other utilities; AES's ratio has decreased considerably since 1994 due to capital expenditures for generating equipment.

Source: GAO analysis based on entity annual reports.

## TVA's Capital Cost Recovery Remains Relatively Low

Electricity providers, including TVA, generally recover their capital costs once the capital assets have been placed in service by spreading these costs over future periods for recovery through rates. This way, customers “pay” for the capital assets over time as the assets provide benefits. When a decision is made not to complete a capital asset, it becomes “abandoned.” Accounting standards require that abandoned assets be classified as

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regulatory assets and amortized into operating expense; therefore, they would be included in rates over time.<sup>24</sup> Thus, even though abandoned assets are nonproductive, the costs may still be recovered.

TVA's three uncompleted deferred nuclear power units have not been classified as abandoned, even though no construction work has been done in the last 12 to 15 years. In 1995 and 1997, we reported that TVA should classify them as regulatory assets and begin to recover the costs immediately. However, TVA continues to assert that there is a possibility the units will be completed in the future and has not classified them as regulatory assets and begun to recover their costs.

As of September 30, 2000, the deferred cost of the three uncompleted nuclear generating units was about \$6.3 billion. If TVA is required to compete with other electricity providers, depending on the market price of power and TVA's cost of providing power, recovery of these deferred assets could be difficult. Effective for 1999, TVA began emphasizing the accelerated recovery of certain of its other deferred assets in its planning and adopted accounting policies that would enable it to recover more of these costs earlier.<sup>25</sup> However, as the following analysis indicates, TVA's continued deferral of the \$6.3 billion related to the three nuclear units would hinder its ability to compete in a restructured environment, if TVA tries to recover the costs through rates. This would increase the risk of loss to the federal government from its financial involvement in TVA.

The extent to which the costs of deferred capital assets have not been recovered by TVA compared to its likely competitors can be shown by two analyses. The first analysis compares the amount of capital assets that have not yet begun to be taken into rates to gross PP&E.<sup>26</sup> For TVA, this consists of construction work in progress (CWIP)<sup>27</sup> and the costs of the deferred

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<sup>24</sup>Financial Accounting Standards Board (FASB) Statement of Financial Accounting Standards (SFAS) No. 90, *Regulated Enterprises—Accounting for Abandonments and Disallowances of Plant Costs*.

<sup>25</sup>As of September 30, 2000, TVA had recovered about \$1.1 billion of the costs of its unamortized regulatory assets and other deferred charges. None of the \$1.1 billion related to TVA's deferred nuclear units.

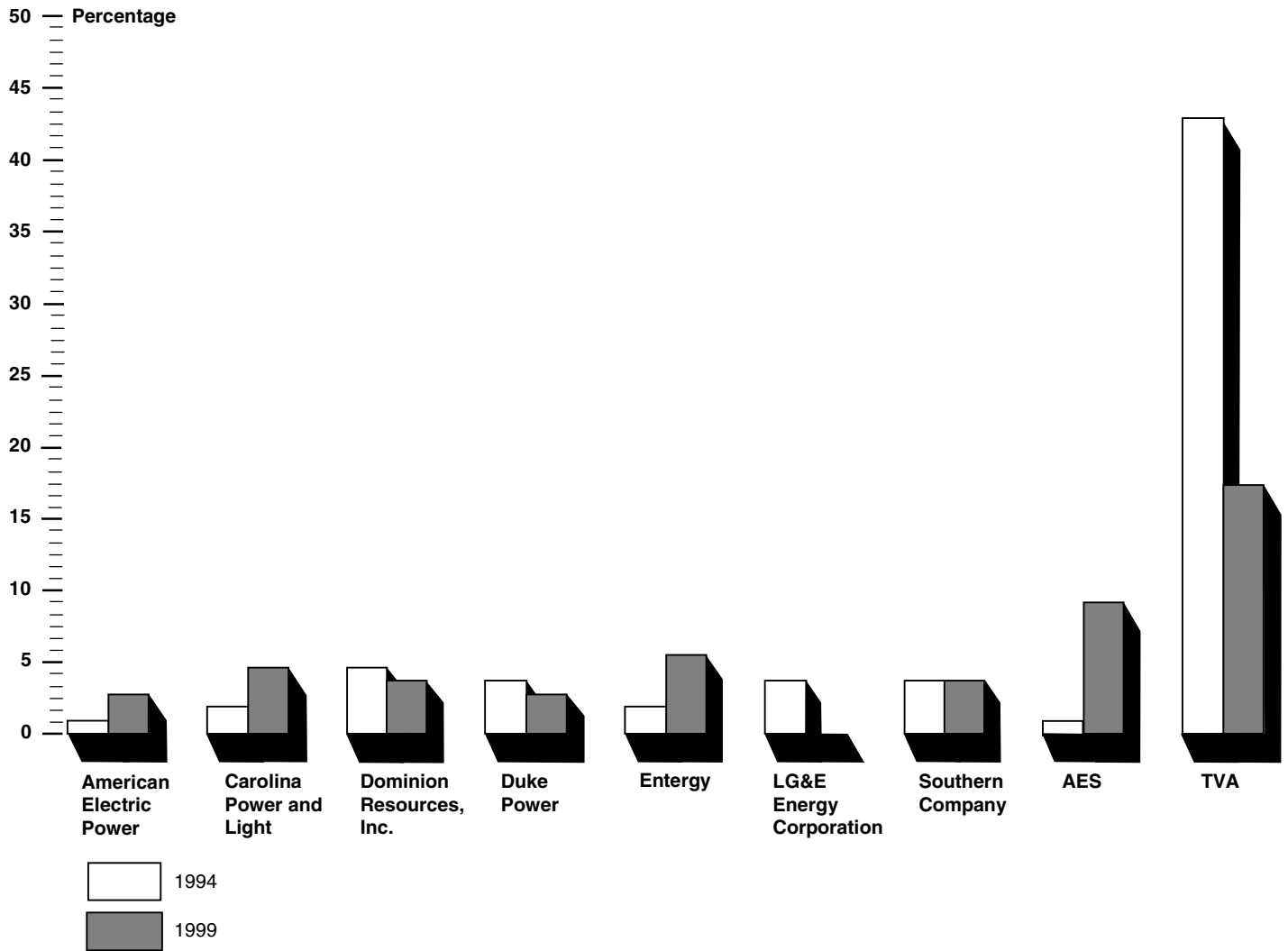
<sup>26</sup>For this analysis, we only include those deferred assets that TVA and its competitors include in PP&E; thus, we excluded other deferred assets.

<sup>27</sup>CWIP represents the cost of PP&E projects under construction that have not been placed into service.

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nuclear units; for the other entities this consists of CWIP only. A lower ratio indicates fewer capital costs to be recovered through future rates, and therefore more flexibility to adjust rates to meet future competition. TVA's ratio improved—dropping by more than half—when it brought two nuclear plants on line in 1996 and began to recover their costs. However, as figure 8 shows, the portion of TVA's capital assets that has not yet begun to be taken into rates remains significantly higher than that of likely competitors. This is due largely to the deferral of TVA's three uncompleted nuclear units. For example, about 19 percent of the total cost of TVA's PP&E as of September 30, 1999, was not in rates, while the highest percentage for TVA's likely competitors was only 10 percent.

**Figure 8: Ratio of Portion of Capital Assets Not Yet Begun to Be Taken Into Rates Compared to Gross PP&E for TVA and Likely Competitors for Fiscal Years 1994 and 1999**



Source: GAO analysis based on entity annual reports.

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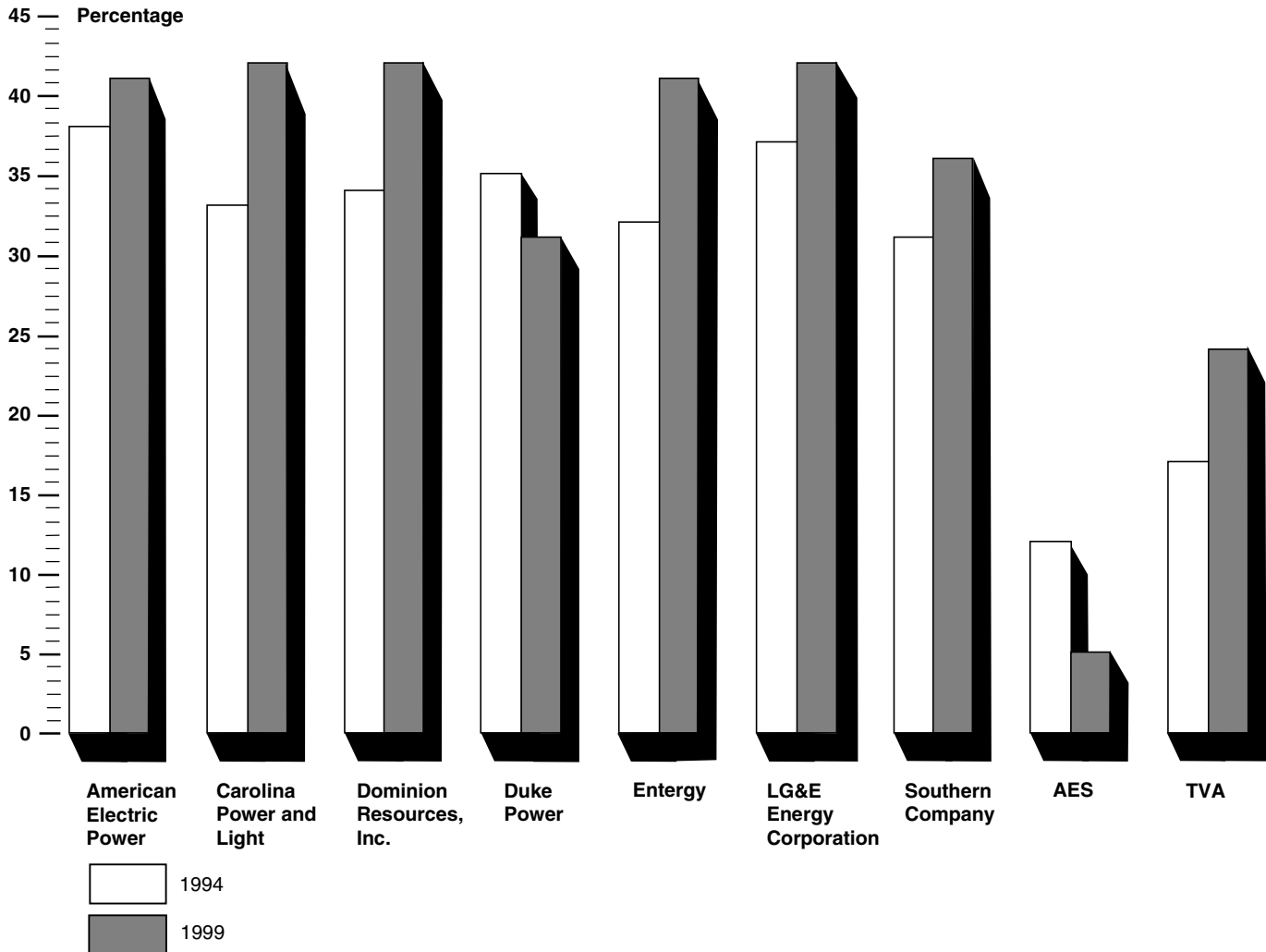
A second way to analyze the extent to which capital costs have been recovered through rates is to compare accumulated depreciation/amortization<sup>28</sup> to gross PP&E. A higher ratio indicates that a greater percentage of the cost of PP&E has been recovered through rates. A utility that has already recovered a greater portion of its capital costs could be in a better financial condition going into an increasingly competitive environment because it would not have to include those costs in future rates. TVA has also made progress in this area since 1994, as have, in general, its likely competitors. However, figure 9 shows that as of September 30, 1999, TVA had recovered a substantially smaller portion of its capital costs than most of its likely competitors, again, largely due to the deferred nuclear units.

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<sup>28</sup>Depreciation is the process of recovering the cost of PP&E by allocating the expenses associated with it to each period benefited by the asset. Amortization is the allocation of expenses associated with intangible and other assets, such as abandoned plant costs, to each period benefited.



**Figure 9: Ratio of Accumulated Depreciation/Amortization to Gross PP&E for TVA and Likely Competitors as of Fiscal Years 1994 and 1999**



Source: GAO analysis based on entity annual reports.

When considering its financing costs and unrecovered deferred assets, TVA's financial condition compares unfavorably to its likely competitors. Although TVA's ratio of net cash from operations to expenditures for PP&E and common stock dividends is better than its likely competitors, this advantage is negated by TVA's relatively higher financing costs, including fixed financing costs, and relatively higher deferred asset costs. These

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factors reduce TVA's financial flexibility to respond to future financial or competitive pressures, a key objective of TVA's 10-year plan.

Bond analysts with experience rating TVA's bonds confirmed our assessment by stating that if forced to compete today, TVA's financial condition would pose a serious challenge. The analysts further stated that their Aaa rating of TVA bonds is based on TVA's ties to the federal government and the belief that any restructuring legislation would give TVA sufficient time to prepare for competition. According to the analysts, their bond rating of TVA was not based on the same financial criteria applied to the other entities rated.

When assessing the progress TVA has made in achieving the key objectives of its 1997 plan, TVA's financial condition remains unfavorable compared to its likely competitors in the current environment. However, TVA also has certain competitive advantages. Specifically, it

- remains its own regulator;
- is not subject to antitrust laws and regulations;
- enjoys a high bond rating, and associated lower interest costs, based on its ties to the federal government;
- is a government entity that is not required to generate the level of net income that would be needed by a private corporation to provide an expected rate of return;
- is not required to pay federal and state income taxes and various local taxes, but is required to make payments in lieu of taxes to state and local governments equal to 5 percent of gross revenue from sales of power in areas where its power operations are conducted; in addition, TVA's distributors are also required to pay various state and local taxes; and
- has relatively more low-cost hydroelectric power than neighboring utilities.

Although TVA enjoys these competitive advantages, its high debt and unrecovered costs would present challenges in a competitive environment. However, it is not possible to predict TVA's future competitive position. In addition to uncertainties over the future market price of power, TVA's future competitive position will be affected by a number of issues, including

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- the specific requirements of any legislation that might remove TVA's legislative protections, including whether it would be able to retain some or all of the competitive advantages described previously;
  - actions being taken by TVA to prepare for competition in relation to those being taken by TVA's competitors;
  - the amount of time before TVA might lose its protections from competition and is required to compete with other utilities—the longer TVA is legislatively protected from competition, the longer it will have to reduce its debt and related financing costs and recover deferred costs through rates;
  - the extent to which TVA would write off all or a portion of the cost of its deferred nuclear units to retained earnings should it go from a regulated to a restructured, competitive environment. To the extent retained earnings is sufficient to cover the cost of the write-offs, any costs written off directly to retained earnings would not have to be recovered through future rates;<sup>29</sup> and
  - total cost of delivering power in relation to likely competitors, generation capacity and mix, transmission capability, and geographic location.

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<sup>29</sup>TVA follows FASB standards on regulated enterprises, including SFAS No. 71, *Accounting for the Effects of Certain Types of Regulation*. Unless otherwise prescribed by restructuring legislation, TVA would be required to apply other FASB accounting standards in a nonregulated environment, including FASB 101, *Regulated Enterprises—Accounting for the Discontinuation of Application of FASB Statement No. 71*; and FASB 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed of*. Under these standards, TVA would be required to mark certain of its capital assets up/down to market value. If the book value of those capital assets exceeds market value, TVA would be required to recognize the difference as a period loss and write it off to retained earnings. However, restructuring legislation could allow the recovery of certain capital assets that otherwise would be required to be written off in accordance with accounting standards.

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## TVA's Potential for Stranded Costs and Options for Recovery

Stranded costs can generally be defined as costs that become uneconomical to recover through rates when a utility moves from a regulated to a competitive environment. Stranded costs arise in competitive markets as a result of uneconomic assets, the costs of which are not recoverable at market rates.<sup>30</sup> There are two commonly used methods for calculating stranded costs, and various mechanisms have been used to recover them in the states that have restructured their electricity markets. TVA's potential for stranded costs arises mainly from its uneconomic assets—primarily its three nonproducing nuclear units with unrecovered costs totaling about \$6.3 billion—and the fixed costs associated with its high debt. The mechanism(s) that would be available to TVA to recover stranded costs would determine which customer group would pay for them.

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### Calculating and Recovering Stranded Costs

Stranded costs occur when a utility moves from a regulated to a competitive environment and is unable to recover certain costs because the market price of power will not allow it to generate revenue at a level sufficient to recover these costs. Such costs result from past decisions that were considered prudent when they were made, and the costs would have been recoverable in a cost-based, regulated environment.<sup>31</sup> However, in a competitive environment, recovery of these costs would force a utility's price above market, and it consequently could not recover them by charging market-based rates. As discussed below and in appendix II, states that have restructured their electricity markets have addressed the issue of mitigating and recovering potential stranded costs in various ways.

Stranded costs can be the result of, among other things:

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<sup>30</sup>TVA's deferred nuclear units would be uneconomic in either a regulated or a competitive market, but the recovery of the costs associated with them would be different. In a regulated market in which there is little price competition, TVA, acting as its own regulator, would have a better chance of recovering these costs through future rates; in a competitive market, assuming competition had decreased prices, there would be less chance of recovery through rates.

<sup>31</sup>In the regulated environment, utilities are required to meet demand for electricity within their service territories and to make investments in generating assets to do so. The utilities' investment decisions are approved in advance by regulators and the costs are approved to go into the utilities' rate bases. When the regulatory structure is changed, the utilities may no longer be guaranteed the right to recover these costs. If the costs are not recoverable at market rates after regulatory restructuring, they may be considered stranded costs.

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- investment in generation assets that may not be able to produce competitively priced power in a restructured environment, even though the investments were considered prudent at the time they were made;
  - power purchase contracts made in anticipation of future needs that would become uneconomical should market prices for power in a competitive market become lower;
  - regulatory assets, such as deferred income taxes that regulators would have eventually allowed utilities to collect but may not be recoverable in a competitive market;
  - future decommissioning costs for nuclear facilities; and
  - social programs where public utility commissions mandated spending for programs such as demand side management<sup>32</sup>—such costs would typically be capitalized and amortized in a regulated environment, but, since the costs are not part of generating power, the market price for electricity under competition may not allow recovery of them.

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## Methods of Calculating Stranded Costs

Two methods are commonly used to calculate the amount of allowable stranded costs—the FERC “revenues lost” methodology and the “asset-by-asset approach.” FERC has jurisdiction over stranded cost recovery related to wholesale power sales and power transmission and uses the revenues lost method in determining allowable stranded costs for these activities. If legislation is enacted providing for TVA to compete in a restructured environment, TVA would likely fall under FERC jurisdiction for stranded cost recovery for its wholesale customers. TVA’s wholesale sales to its 158 distributors were about \$6 billion in fiscal year 2000, or about 88 percent of TVA’s total operating revenues.

Under the FERC methodology, whether a utility’s plants are nonproducing or productive is immaterial to the stranded cost calculation, as long as the costs associated with the plants are included in rates at the time a customer departs TVA’s system. According to FERC officials, stranded cost recovery assumes the costs are already in the rate base; if not, FERC officials told us they would likely not consider them in a stranded cost recovery claim. The three deferred nuclear units, with costs of about \$6.3 billion as of September 30, 2000, that TVA has not yet begun recovering, are a primary reason for TVA’s potential exposure to stranded costs. However, TVA’s projections through 2007, using its current power rates, show that by the

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<sup>32</sup>Demand side management programs offer incentives to consumers to modify patterns of electricity usage.

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end of 2007 the costs will have been reduced to about \$3.8 billion.<sup>33</sup> Depending on the timing of any restructuring legislation affecting TVA and assuming that FERC would have jurisdiction over TVA, it is unclear whether FERC would consider these costs to be in TVA's rate base and, thus, allow TVA to include some or all of these costs in a stranded cost recovery claim.

In the past when TVA calculated its stranded costs, it used the FERC "revenues lost" methodology. When the 4-County Electric Power Association (near Columbus, Mississippi) and the city of Bristol, Virginia, threatened to find other sources of power, TVA used the FERC methodology to calculate stranded costs, and TVA officials told us that they would continue to use the FERC methodology to calculate stranded costs in the future. TVA's calculations of stranded costs for the 4-County Electric Power Association ranged from \$57 million to \$133 million.<sup>34</sup> The 4-County Electric Power Association ultimately decided not to leave the TVA system and therefore no stranded costs were assessed. In contrast, Bristol did leave the TVA system. TVA again calculated stranded costs using the FERC methodology and initially attempted to assess Bristol for \$54 million for stranded costs. However, TVA and the city of Bristol ultimately negotiated a settlement that included an agreement under which Bristol would not be assessed for stranded costs, but would purchase transmission and certain ancillary services from TVA.

According to a FERC official, under the revenues lost method, when a customer leaves a utility's system, stranded costs are calculated by

- first taking the revenue stream that the utility could have expected to recover if the customer had not left, then

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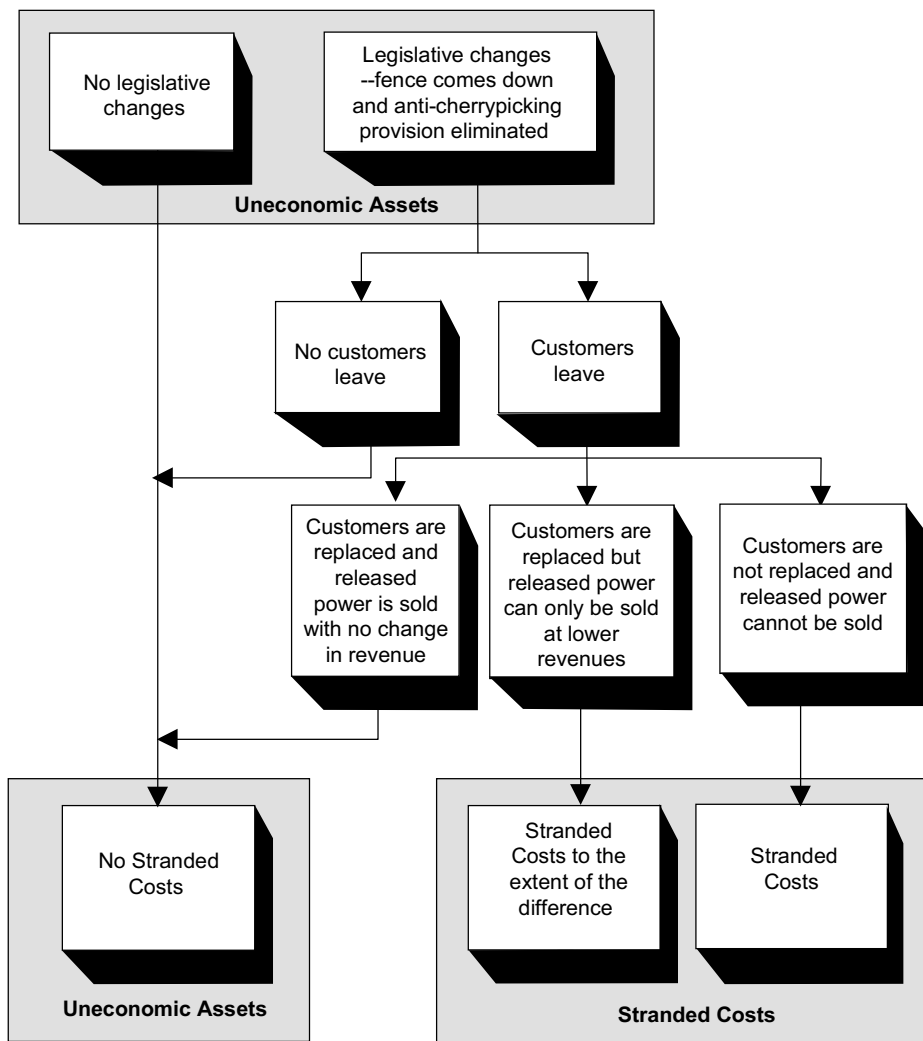
<sup>33</sup>The underlying spreadsheets provided by TVA show that it will begin recovering these costs in 2005. However, in February 2001, TVA officials told us that based on revenue projections for fiscal year 2001, it is possible that TVA could begin recovering these costs as early as fiscal year 2002.

<sup>34</sup>To determine stranded costs in the case of the 4-County Electric Power Association, TVA performed a study in which it evaluated four scenarios using different capacity alternatives. According to TVA officials, under all four scenarios, TVA would have been forced to sell the freed up capacity at a lower price than it would have received under the existing contract with the 4-County Electric Power Association due to a limited wholesale market for the released capacity.

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- subtracting the competitive market value of the electricity capacity released by the departing customer (that the utility will sell to other customers), then
  - multiplying the result by the length of time the utility could have reasonably expected to continue to serve the departing customer.

Figure 10 illustrates TVA's potential application of the FERC methodology.

**Figure 10: TVA's Potential Application of the FERC Methodology for Calculating Stranded Costs**



Note: As discussed previously, TVA could still have uneconomic assets even if it has no stranded costs. Restructuring changes the character of uneconomic assets from costs that might be recoverable in a regulatory environment to stranded costs that may not be recoverable in a competitive environment.

Source: GAO analysis based on information from TVA and FERC.



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The second commonly used method to calculate stranded costs is the “asset-by-asset” or “bottoms up” approach. This method has been used by the states when they restructure their retail markets. In this method, the market value<sup>35</sup> of a utility’s generating assets is determined and compared to the amount at which those assets are currently recorded on the utility’s books (book value). The difference would be reflected on the income statement as a gain or loss and recorded in the retained earnings of the organization. If the total book value of a utility’s generating assets exceeds their total market value, the utility would have stranded costs equal to the difference between book and market values.

Because TVA is a unique<sup>36</sup> self-regulator that crosses state borders and is not currently subject to FERC regulation, it is unclear what entity would have jurisdiction over any stranded cost recovery at the retail level.<sup>37</sup> Sales to TVA’s direct service industrial customers and other nondistributors, which we consider retail sales because they are sales to final users, were about \$0.7 billion in fiscal year 2000, or about 10.4 percent of TVA’s total operating revenues.

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## Options for Recovering Stranded Costs

In the states that have restructured their electricity markets, there have been five commonly used mechanisms to recover stranded costs.<sup>38</sup> Depending on the approval of state regulators, utilities have the following options; the choice of option affects which customer group pays.

- **Exit fees** – fees charged to departing customers, either via a lump sum or over a set number of years.

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<sup>35</sup>Market value is the amount a willing buyer would pay and a willing seller would accept in an arms-length transaction.

<sup>36</sup>TVA is the only federal government corporation supplying electricity and is specifically excluded from the wheeling provisions of EPCA; other federal entities involved in the electricity industry are not government corporations but include entities under the departments of Defense, Agriculture, Energy, Interior, and State.

<sup>37</sup>In its published discussion to the April 1999 Clinton administration’s plan for restructuring the electricity industry, officials state that “since no State would have jurisdiction over TVA, there must be a federal arbiter [FERC] to provide for the Authority’s [TVA’s] recovery of its stranded costs;” however, this was only a proposal.

<sup>38</sup>In addition, the states that have restructured have generally used three mechanisms for mitigating the amount of stranded costs. These mechanisms were employed either before or during the restructuring. See appendix II for a discussion of the mitigation mechanisms.

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- **Competitive transition charge** (or competitive transition assessment) – either (1) a one time charge applied to all customers at the time the state initiates restructuring, or (2) charges based on kilowatthour (kWh) usage, usually charged to remaining customers over a set number of years.
  - **Wires charge** (also called transmission surcharge) – a predetermined surcharge that is not based on kWh usage, which is added to remaining customers' power bills during a set period of time; sometimes considered a subset of competitive transition charges.
  - **Rate freeze or cap** – regulators set a cap on the total amount a utility can charge; however, under the cap, the regulator would allow the utility to recover stranded costs by charging higher prices for the two components of the market that are still regulated (distribution and transmission). The cap is usually frozen for the estimated length of time needed to recover the stranded costs. Remaining customers bear the burden.<sup>39</sup>
  - **Write off to retained earnings** – In the case where a utility moves from a regulated to a competitive environment and has assets whose book value is in excess of market value, it would mark its assets to market value, and recognize any excess of book value over market value as a loss on the income statement, which would flow through to retained earnings. Retained earnings represent cumulative net profit from past operations that can be used to benefit either stockholders or current and future customers, by keeping profits in the company for future use. In addition, the change to a competitive environment, with overvalued assets, could result in stranded costs. However, the legislation that caused the change to a competitive environment could give utilities the option of recovering the amount of overvalued assets over time, rather than charging all the cost to retained earnings immediately. Writing off the costs of the overvalued assets to retained earnings immediately would mitigate potential stranded costs and eliminate the need to recover the cost of these assets from future ratepayers, making a utility's power rates potentially more competitive.

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<sup>39</sup>It should be noted that not all entities consider competitive transition charges, wires charges, or rate caps to be true stranded cost recovery mechanisms. For example, the Edison Electric Institute (EEI), the industry group for investor-owned utilities, considers only that portion of costs associated with the change to competition that is paid by departing customers to be stranded costs; other mechanisms that involve recovery from remaining customers or other groups is considered cost shifting. Therefore, EEI believes only exit fees are an appropriate stranded cost recovery mechanism. The option(s) available to TVA to recover potential stranded costs would depend upon the final makeup of any restructuring legislation passed by Congress.

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## TVA Has the Potential for Stranded Costs Because of Its Nonproducing Nuclear Plants and High Debt

TVA continues to operate similar to a regulated monopoly because of its legislative protections from competition. Since regulatory changes requiring TVA to compete with other electricity providers have not been made, TVA does not currently have stranded costs.

However, as discussed previously, TVA has uneconomic assets—primarily its three nonproducing nuclear units with unrecovered costs totaling about \$6.3 billion that do not generate revenue. In 1998, TVA estimated the net realizable value of these assets to be about \$500 million.

TVA has not made a final decision on whether to abandon these three units or complete them and place them into service. If it abandons them, under current accounting standards,<sup>40</sup> TVA would be required to mark them to market value, begin amortizing the revalued plants on a yearly basis over a set number of years, and recognize any excess of book value over market value that it deems unrecoverable as a loss on the income statement of the year in which the decision is made. However, according to the proposed revision to its 10-year plan, to the extent there is sufficient revenue, TVA plans to begin recovering the full costs of these assets by 2005.<sup>41</sup> This action would require approval of TVA's Board. If its retained earnings are not sufficient to cover any losses arising from revaluation of these units, TVA could find itself with stranded costs if legislation were enacted that would require TVA to compete with other electricity providers before it completes these units and brings them into operation. TVA's ability to recover costs that could ultimately become stranded is compounded by TVA's high debt and corresponding financing costs.

If legislation is enacted subjecting TVA to FERC authority, subject to FERC approval, TVA officials envision using exit fees, wires charges, or competitive transition charges to recover any allowable stranded costs. FERC's guidance specifies that the recovery mechanism would be exit fees from departing customers. However, TVA could have difficulty recovering any stranded costs because of existing contracts entered into with 97 of its 158 distributors. These contracts would prevent TVA from collecting stranded costs after 2007 from these distributors if they agreed to purchase all their power requirements from TVA through 2007. Proposed

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<sup>40</sup>FASB 90 would apply because TVA remains in a regulated environment.

<sup>41</sup>As mentioned earlier, TVA officials told us they could begin recovering the costs of these deferred nuclear units as early as fiscal year 2002.

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restructuring legislation would have required these contracts to be renegotiated; however, it is possible that this clause will remain in effect. Thus, if TVA enters a competitive environment with stranded costs, it may be unable to collect them from certain departing customers after 2007, and the burden for recovering these costs may fall on remaining customers or retained earnings from prior customers.<sup>42</sup>

According to TVA officials, if TVA were unable to collect any stranded costs from departing customers under its contracts, remaining customers would bear the burden of stranded cost recovery. To the extent stranded cost recovery is spread among remaining customers, it would become more difficult for TVA to price its power competitively.

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## The Link Between TVA's Potential Stranded Costs and Its Debt Reduction Efforts

A key element of TVA's 10-year business plan is to reduce its cost of power. TVA planned to accomplish this by reducing expenses, limiting capital expenditures, and instituting a rate increase in 1998 to increase the cash flow available to pay down debt. Reducing debt, in turn, reduces the corresponding annual interest expense. By reducing interest expense, TVA frees up cash that can be used to further reduce debt. In addition, these actions increase the portion of revenue that would be available to recover the costs of its deferred assets. To the extent that TVA reduces costs, it will be able to offer more competitively priced power and its distributors will be less likely to leave TVA's system for alternate suppliers. At the wholesale level, under current FERC rules, if its distributors do not leave, TVA does not have the option of recovering stranded costs. If its distributors decide to leave, TVA would have potential stranded costs if TVA is either unable to sell the power released by the departing distributor or is forced to sell the power that would have been purchased by the departing distributor for

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<sup>42</sup>Depending on the magnitude of TVA's potential stranded costs, its retained earnings may not be sufficient to cover them. For example, TVA's main uneconomic assets—its three nonproducing nuclear plants—have a book value of about \$6.3 billion, some or all of which could contribute to potential stranded costs—while its retained earnings as of September 30, 2000 are about \$3.7 billion.

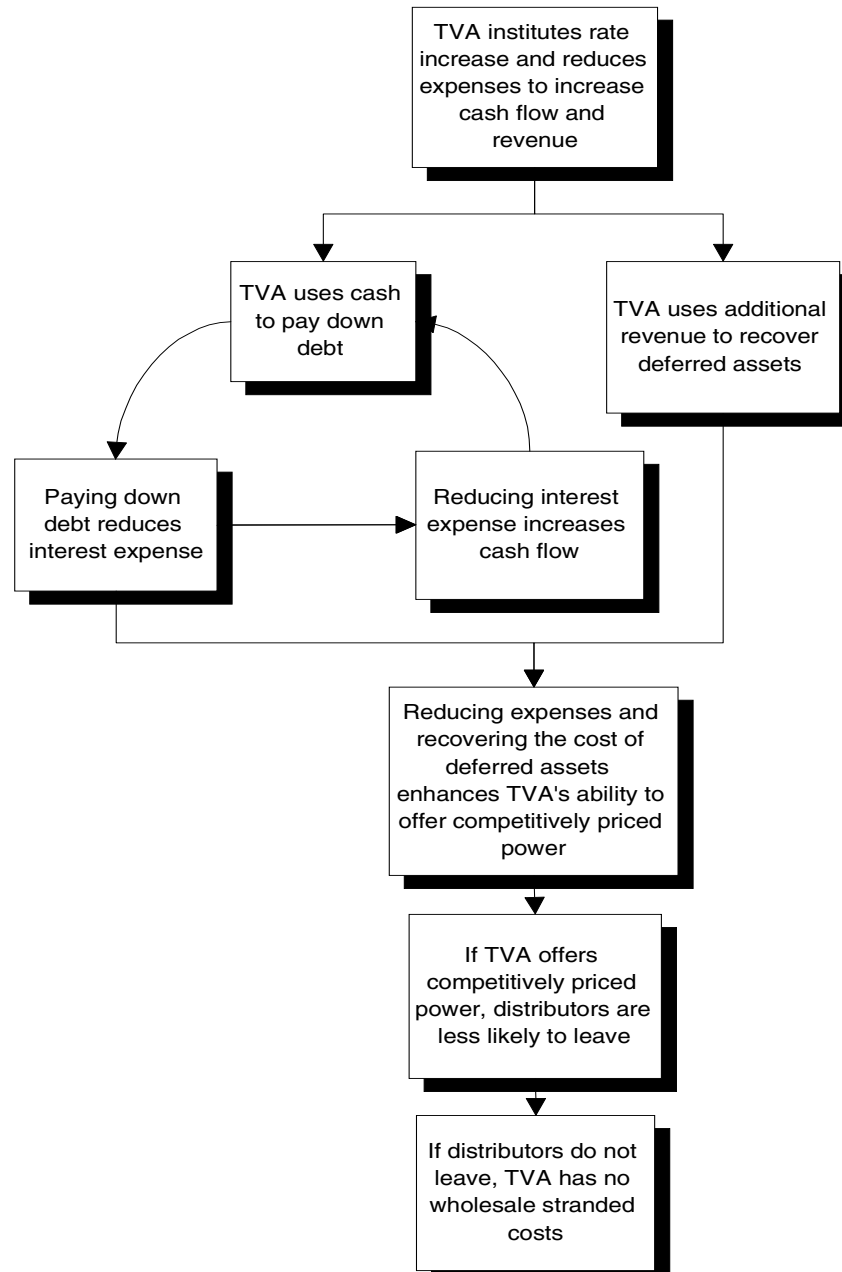
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lower rates.<sup>43</sup> Figure 11 illustrates the link between debt reduction and stranded costs.

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<sup>43</sup>This discussion applies to TVA's wholesale distributors because, as noted in our report, they account for about 88 percent of TVA's sales, and it is unclear who would have jurisdiction over any stranded costs at the nondistributor level. The main difference between stranded cost recovery at the wholesale and retail levels is that the options available for retail stranded cost recovery do not necessarily presuppose that a customer leaves. However, the link between TVA's potential stranded costs and debt reduction remains the same.

**Figure 11: The Link Between TVA's Debt Reduction Efforts and Its Potential Stranded Costs**



Source: GAO analysis.

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This circular relationship is key to understanding how TVA's 10-year plan links to potential stranded costs. In its original 10-year plan, a key element of TVA's plan was to reduce its cost of power by cutting its debt in half by September 30, 2007. By reducing debt, TVA would also reduce future interest expense, which would free up additional cash that could be used to further reduce debt. However, not explained in the published plan was how the revenue generated from its 1998 rate increase would give TVA the opportunity to recover the cost of its deferred assets. By increasing revenue and reducing expenses, TVA would free up revenue that could be used to recover the cost of its deferred assets and cash that could be used to pay down debt.

As discussed previously, TVA estimates the additional revenue from the rate increase over the first 3 years of the plan to be about \$1.24 billion. TVA had the option to use that revenue for any authorized purpose, such as adding any excess revenue to retained earnings, accelerating depreciation, or amortizing its deferred assets, including writing down its deferred nuclear units. TVA planned to first amortize some of its other deferred assets before writing down its deferred nuclear units. To accomplish this, TVA's Board of Directors approved a resolution to begin accelerating amortization of these other deferred assets. This means that in any given year in which TVA has revenue sufficient to meet all of its legal requirements to recover all costs and comply with all laws and regulations regarding revenue levels, any excess revenue can be used to accelerate the write-down of a portion of the costs of its deferred assets; this would result in TVA recovering these costs over time.<sup>44</sup>

In relation to its deferred nuclear units, TVA's original plan was to recover all but \$500 million of these \$6.3 billion costs by September 30, 2007, at which time TVA officials believed it could be subject to a competitive environment through legislative changes and expiring customer contracts. Its proposed revision to the 10-year plan now calls for a balance of about \$3.8 billion by 2007, or about \$3.3 billion more than originally planned. To the extent TVA recovers the costs of the deferred nuclear units before such time as the Congress may remove its legislative protections, it would no longer have to recover these costs through future rates, potentially making

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<sup>44</sup>As previously noted, TVA is allowed to but is not required to make a profit. The supporting schedules to TVA's 10-year plan indicate that TVA plans to manage its earnings so that in general, its net income will be about \$100 million per year, and any net income in excess of \$100 million can be used to accelerate amortization or write off its deferred nuclear units.

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its power more competitive, and giving it more flexibility to operate in a competitive environment. And, as noted above, if TVA is able to offer competitively priced power by 2007, its distributors would be less likely to leave and TVA would be less likely to have stranded costs.

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## Conclusions

If TVA were to lose its legislative protections today, its high level of debt and corresponding high financing costs would be a competitive challenge. This competitive challenge would be even greater if it were at the same time attempting to recover costs of deferred assets through rates. Despite having reduced its debt and deferred assets over the past 3 years, TVA still compares unfavorably to its likely competitors in these regards. In addition, TVA is revising its goals for reducing debt and deferred assets downward significantly. Whether or not the deferred assets will contribute to stranded costs that are recoverable from customers depends on the specific requirements of any legislation that might remove TVA's legislative protections and TVA's ability to retain its current competitive advantages in a restructured environment. In addition, the longer that TVA has to prepare for competition, the longer it will have to reduce debt and recover the costs of its deferred assets and position itself more competitively. Ultimately, TVA's ability to be competitive will depend on the future market price of power, which cannot be predicted with any certainty.

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## Agency Comments and Our Evaluation

TVA, in a letter from its Chief Financial Officer, disagreed with our findings in three areas—the future market price of electricity, TVA's financial condition compared to other utilities, and the relationship between TVA's deferred assets and potential stranded costs. TVA's comments are reproduced in appendix III and discussed below. In addition, TVA officials provided technical comments on the draft report, which we have incorporated as appropriate.

TVA also took the opportunity to comment, in a section called "Looking Back," on progress it has made since issuing its 10-year plan in 1997, including reducing debt and recovering the costs of certain deferred assets, and its goals and strategies for the future. We discuss these comments at the end of this section.

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## Market Prices for Electricity

TVA agreed that the future market price of electricity is a key factor in assessing the likelihood of success in a competitive environment and that



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the price cannot be predicted with any certainty, but disagreed on the general direction of prices. TVA and its consultants are projecting higher future market prices. As evidence of projected increases in market prices, TVA cites higher trading prices, higher “forward” prices offered by suppliers, higher long-term contract price offerings, and higher prices for fuel sources such as natural gas. Our report discusses TVA’s views in this regard; however, we underscore the uncertainty of projections of the future price of power by citing a knowledgeable source that projects lower prices.

In the draft we provided to TVA for comment, we included point estimates from various sources for the future market price of power. Considering TVA’s comments, we agree that point estimates imply more certainty about future prices than we intended or is warranted. As a result, we revised our report by removing those estimates. However, to underscore the uncertainty of future market prices, we have included the Energy Information Administration’s (EIA) projection of a downward trend in the future market price of power<sup>45</sup> in the region in which TVA operates. EIA’s analysis was based in part on a projected decline in coal prices<sup>46</sup> that, according to EIA, would more than offset projected increases in gas prices. EIA is also projecting that nuclear fuel prices will remain steady. We believe these are relevant points to consider since, in the year 2000, TVA’s power generation fuel mix was about 63 percent coal, 31 percent nuclear, 6 percent hydropower (which has no fuel cost), and less than 1 percent natural gas.<sup>47</sup> Our main point is that the future market price of power “cannot be predicted with any certainty.”

TVA cites prices for electricity and natural gas for December 2000 as an example of market direction and volatility to support their projection of future higher prices. We agree that the market has shown volatility at certain times. In fact, this volatility strengthens our view that future prices are uncertain. In addition, according to data from the National Oceanic and Atmospheric Administration, in the entire region in which TVA markets power, December 2000 was one of the 10 coolest periods on record over

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<sup>45</sup>Prices from EIA are in current dollars.

<sup>46</sup>EIA projects prices for coal to decline due to improved productivity in coal mining and growing production from lower-cost mines in the west.

<sup>47</sup>Since 1999, TVA has added 680 megawatts (mw) of new gas-fired peaking capacity and plans to add up to another 1360 mw of gas-fired peaking capacity over the next 2 years. However, based on the usage patterns of peaking units, the percent of total generation from natural gas units should not significantly increase.

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the last 106 years. We would not predict the future on the basis of such an anomaly.

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## Comparing TVA's Financial Condition With Private Utilities

TVA commented that it appreciated our recognition of its progress in improving its financial condition, but objected to our findings that TVA's financial condition compares unfavorably to likely competitors. In particular, TVA questioned our choice of financial ratios in comparing it to other utilities. TVA noted that most of our ratios ignore total cost and merely reflect the differences between the capital structure of TVA and that of IOUs. We disagree with TVA in this regard. Our choice of ratios was appropriate because they result in meaningful information regarding the relative financial conditions of the entities.

To assess the financial condition of the entities, we selected two types of ratios. The first type indicates an entity's financial flexibility to successfully respond to competitive and financial challenges. In this regard, we compared TVA to other utilities in terms of (1) total financing costs, (2) fixed financing costs, and (3) the ability of an entity to pay for capital expenditures and common stock dividends from net cash generated from operations. Each of these ratios is an indicator of an entity's ability to withstand stressful financial conditions. Interest costs are particularly important to consider because they are fixed costs that must be paid even in times of competitive or financial pressures.

Contrary to TVA's comment letter, we recognize the differences between TVA's financial structure and those of IOUs and accounted for those differences in performing our analyses. As our report notes, TVA's financing (except for internally generated cash, as with all entities we assessed) is obtained by issuing debt, while IOUs also have the option of equity financing. The requirement that TVA obtain financing only by issuing debt could be considered a competitive disadvantage because of the corresponding fixed financing costs which affect TVA's financial flexibility. The ratio of total financing cost to revenue compares TVA interest costs, as a percent of revenue, to the IOUs' costs of (1) interest, (2) preferred stock dividends, and (3) common stock dividends as a percent of revenue. The ratio of fixed financing costs to revenue compares TVA interest costs, as a percent of revenue, to the fixed portion of the IOUs' financing costs (i.e., their interest costs and preferred stock dividends) as a percent of revenue. These analyses appropriately adjust for the different financing structures of the entities in assessing financing costs, and assessing the extent to which

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entities have fixed costs that limit their financial flexibility is a valid means by which to consider their respective financial conditions.

The second type of financial ratio we used indicates the extent to which capital costs, including the costs of deferred assets, have been recovered. In this regard, we compared TVA to other utilities in terms of the (1) portion of capital assets that has not begun to be included in rates and (2) the portion of gross property, plant, and equipment that has already been recovered. These indicators are important because a high level of unrecovered capital costs could compound an entity's challenges as it enters a competitive market. In the case of TVA, if it enters a competitive environment with the relatively high debt service costs it now carries, its ability to price its power competitively could be jeopardized, thus increasing its potential for stranded costs. Our report notes that TVA's competitive challenges would be even greater if it were at the same time attempting to recover the costs of deferred assets through rates.

We disagree with TVA's statement that a single statistic—the residential price of electricity in TVA's region—best reflects TVA's competitiveness. While we agree that selling price is a function of cost, we note that TVA has a large amount of unrecovered costs. Since TVA remains in a regulated environment, with the ability to set its own rates and to recover or defer recovering the costs of some of its capital assets, this single statistic does not provide a complete picture of TVA's costs nor its ability to operate in a competitive environment. In addition, TVA's current cost of delivering power does not provide a complete picture of the competitive environment TVA would likely be subject to if its legislative protections and the benefits of being a wholly owned government corporation were removed.

We also disagree with TVA's statement that our ratios are distorted because they do not recognize the uniqueness of TVA's business compared to others. According to TVA, a distortion results when TVA, which has predominantly wholesale sales, is compared to other entities that have predominantly retail sales. However, these other entities also sell at wholesale and would be competing with TVA at that level. Regardless, an entity's fixed costs and portion of capital assets that have not been recovered are relevant and important considerations as one considers an entity's prospects in a competitive market, be it wholesale or retail. We also note that, in its comment letter, TVA compared its total production costs to those of the 50 largest power producers in the United States, which for the most part are providers of retail power, but objected to our comparing TVA to some of the same utilities.

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## Deferred Assets and Stranded Costs

TVA states “the report is misleading when it implies that the historical accounting value of any particular set of assets determines the potential for stranded costs,” and that it is the net market value of all assets combined that is germane to the determination of stranded costs, and only if their amortization drives total cost above market. While we do not disagree with TVA’s interpretation of stranded costs, we do disagree that historical accounting value plays no part in determining stranded costs. Historical accounting value, less accumulated depreciation and/or amortization, shows the amount of remaining capital costs to be recovered in the future. If TVA is attempting to recover more of these costs than other utilities in a competitive market and, as a result, its rates are above market, it could have stranded costs.

TVA also implies that we consider its deferred assets to be a proxy for stranded costs. On the contrary, our report clearly states that TVA could have stranded costs if it were unable to recover all its costs when selling power at or below market rates. In addition, we state that TVA’s potential for stranded costs relates to its high debt and deferred assets, which as of September 30, 2000, totaled about \$26 billion and \$8 billion, respectively. Recovery of these costs could drive the price of TVA’s power above market, leading to stranded costs. This is consistent with TVA’s definition of stranded costs.

Our report reaches no conclusion on whether TVA will have stranded costs; it merely points out that if TVA is unable to price its power competitively because it is attempting to recover costs it incurred in the past, it could have potential stranded costs, depending on market conditions at the time. As noted above, due to the uncertainty of the future market price of power, we also do not conclude on whether TVA will be competitive in the future.

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## Looking Back

TVA notes that it has made progress in reducing debt, and corresponding interest expense, and recovering the costs of deferred assets since it released its 1997 plan. For example, by the end of fiscal year 2001, TVA expects to have reduced its debt by about \$2.2 billion and its annual interest expense by about \$300 million, and expects to have recovered about \$2 billion in costs associated with its deferred assets. While we agree that TVA is moving in the right direction, TVA’s current proposed revisions to its 10-year plan project significantly less progress than envisioned in 1997 and these changes are not without consequence.

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As our report states, TVA's current revisions to the plan estimate that debt outstanding at the end of fiscal year 2007 will be about \$19.6 billion versus the \$13.2 level anticipated when TVA issued its 1997 plan. TVA notes that since issuing the plan in 1997, it changed its strategy by investing cash in new generating capacity that otherwise would have been used for debt reduction. However, in our report we correctly point out that, while TVA has made this change, the cash it has invested in new capacity is far less than its debt reduction shortfall. TVA's current projections show its debt reduction through 2007 being about \$6.4 billion less than planned in 1997, and its investment in new generating capacity about \$1.3 billion more.

As a consequence of this debt reduction shortfall, we estimate that TVA's interest expense in 2008 will be about \$416 million greater than if it had reduced debt to \$13.2 billion. In the 1997 plan, one of TVA's key stated objectives was to "alter its cost structure from its currently rigid, high fixed-to-variable cost relationship to a structure that is more flexible and better able to adjust to a volatile marketplace."<sup>48</sup> TVA's 1997 plan further stated that interest expense is the cost component that, more than any other, challenges TVA's ability to provide power at projected market rates in the future. This situation continues to be true today. However, as we state in our report, ultimately, TVA's ability to be competitive will depend on the future market price of power, which cannot be predicted with any certainty. To the extent TVA is able to improve the financial ratios set out in our report, the better positioned it will be to deal with this future uncertainty.

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As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this letter until 7 days from its date. At that time, we will send copies of this report to appropriate House and Senate Committees; interested Members of Congress; Craven Crowell, Chairman, TVA's Board of Directors; The Honorable Spencer Abraham, Secretary of Energy; The Honorable Mitchell E. Daniels, Jr., Director, Office of Management and Budget; and other interested parties. The letter will also be available on GAO's home page at <http://www.gao.gov>. We will also make copies available to others upon request.

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<sup>48</sup> TVA Ten Year Business Outlook, July 22, 1997.

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Please call me at (202) 512-9508 if you or your staffs have any questions.  
Major contributors to this report are listed in appendix IV.

A handwritten signature in black ink, reading "Linda Calbom". The signature is written in a cursive, flowing style.

Linda M. Calbom  
Director  
Financial Management and Assurance

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# Objectives, Scope, and Methodology

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We were asked to answer specific questions regarding TVA's (1) debt and deferred assets, (2) financial condition, (3) potential stranded costs, and (4) bond rating and its impact on TVA's interest costs. As agreed with your offices, this report addresses the first three questions. We plan to issue a separate report to address the fourth question. Specifically, for each of these three areas, you asked us to determine:

## 1. Debt and deferred assets

- The progress TVA has made in achieving the goals of its 10-year business plan for reducing debt and deferred assets.
- The extent to which TVA has used the additional revenues generated from its 1998 rate increase to reduce debt and deferred and regulatory assets.

## 2. Financial condition

- How TVA's financial condition, including debt and fixed cost ratios, compares to neighboring investor-owned utilities (IOUs).

## 3. Stranded costs

- The link between TVA's debt and its potential stranded costs.
- Whether TVA has calculated potential stranded costs for any of its distributors, and if so, what methodology they used.
- TVA's options for recovering any potential stranded costs.

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## Debt Reduction and Recovery of Deferred Assets

To identify the progress TVA has made in achieving the goals of its 10-year business plan for reducing debt and deferred assets, we

- reviewed GAO's prior report on TVA's 10-year Business Plan;<sup>1</sup>
- interviewed TVA and Congressional Budget Office (CBO) officials;
- reviewed and analyzed various TVA reports and documents, including annual reports, audited financial statements, TVA's 10-year business plan, and proposed updates to the plan; and

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<sup>1</sup>*Tennessee Valley Authority: Assessment of the 10-Year Business Plan* (GAO/AIMD-99-142, April 30, 1999).



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- analyzed supporting documentation (analytical spreadsheets, etc.) and assumptions underlying TVA's 10-year plan and proposed updates to the plan.

To identify the extent to which TVA has used the additional revenues generated from its 1998 rate increase to reduce debt and deferred and regulatory assets, we

- obtained an estimate from TVA of the amount of additional revenue generated from its 1998 rate increase;
- analyzed sales and revenue data in the supporting schedules to the proposed revision to the 10-year plan to determine whether TVA's estimate was reasonable; and
- compared the estimate of the amount of additional revenue generated from the 1998 rate increase to the reduction in debt and deferred assets over the first 3 years of the plan.

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## Financial Condition

To determine how TVA's financial condition, including debt and fixed ratios, compares to its likely competitors, we

- reviewed prior GAO reports on TVA that analyzed its financial condition;<sup>2</sup>
- determined likely competitors by analyzing prior GAO reports and other reports by industry experts;
- obtained and analyzed financial data from the audited financial statements of TVA, seven IOUs, and one independent power producer;<sup>3</sup>
- computed and compared key financial ratios for TVA and the other eight entities;
- reviewed the annual reports of the eight entities to determine what steps they have taken to financially prepare themselves for competition;
- interviewed TVA officials about their efforts to position themselves competitively, including their efforts to reduce debt, recover the costs of their capital assets, and recover stranded costs, and

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<sup>2</sup>*Tennessee Valley Authority: Financial Problems Raise Questions About Long-term Viability* (GAO/AIMD/RCED-95-134, August 17, 1995) and *Federal Electricity Activities: The Federal Government's Net Cost and Potential for Future Losses* (GAO/AIMD-97-110 and 110A, September 19, 1997).

<sup>3</sup>The latest available data for TVA and the other entities was for fiscal years 2000 and 1999, respectively; for consistency, we used 1999 data for all our comparisons.

- analyzed data on the future market price of power.

The ratios we used in our comparison were computed as follows:

- The ratio of financing costs to revenue was calculated by dividing financing costs by operating revenue for the fiscal year. The financing costs include interest expense on short-term and long-term debt, payments on appropriations (TVA only), and preferred and common stock dividends (IOUs only). Note that preferred and common stock dividends were included in the IOUs' financing costs to reflect the difference in the capital structure of these entities and TVA.
- The ratio of fixed financing costs to revenue was calculated by dividing financing costs less common stock dividends by operating revenue for the fiscal year. Common stock dividends were excluded from the IOUs' financing costs because, since they are not contractual obligations that must be paid, they are not fixed costs.
- The ratio of net cash from operations to expenditures for PP&E and common stock dividends was calculated by dividing net cash from operations by expenditures for PP&E and common stock dividends for the fiscal year. Net cash from operations represents the cash received from customers minus the cash paid for operating expenses. Thus, net cash from operations represents the cash available for expenditures for PP&E, common stock dividends (IOUs only), and other investing and financing transactions. Again, we included common stock dividends in the IOUs ratios to reflect the difference in cash flow requirements for these entities and TVA. Preferred stock dividends were not included because they come out of operating revenues and thus are already reflected in the net cash figure. Because these data were not available for all entities, we excluded the effect of capital assets acquired through acquisition.
- The ratio of accumulated depreciation and amortization to gross PP&E was calculated by dividing accumulated depreciation and amortization by gross PP&E at fiscal year-end.
- The ratio of deferred assets to gross PP&E was calculated by dividing deferred assets by gross PP&E at fiscal year-end. Deferred assets include construction in progress and for TVA only, its deferred nuclear units. Deferred nuclear units are included for TVA because TVA treats them as construction in progress (i.e., not depreciated).

For comparison purposes, we selected the major IOUs that border on TVA's service area because industry experts told us that due to the high cost of transmitting electricity, TVA's competition would most likely come from

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IOUs located close to its service area. However, to represent the changing structure of the electricity industry, we included one large independent power producer. We did not include any publicly owned utilities in our analysis because the publicly owned utilities that provide electricity in the states served by our IOU comparison group generally only distribute but do not generate electricity. The IOUs used in our comparisons include (1) American Electric Power, (2) Carolina Power & Light, (3) Dominion Resources, (4) Duke Power, (5) Entergy, (6) LG&E Energy Corporation, and (7) Southern Company. The independent power producer was AES Corporation.

To obtain information on various issues facing utilities in a restructuring industry, we reviewed documents from the Energy Information Administration (EIA) and the annual reports of TVA and the IOUs. We also spoke with the organization that represents TVA's distributors to understand their concerns about TVA's future competitiveness. In addition, we contacted financial analysts to identify the criteria they use to evaluate the financial condition of electric utilities.

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## Stranded Costs

To identify the link between TVA's debt and its potential stranded costs, we

- interviewed industry experts at the Federal Energy Regulatory Commission, Edison Electric Institute (EEI), and CBO on the options other utilities have pursued to recover stranded costs;
- reviewed EIA documents pertaining to how stranded costs have been dealt with in the states that have restructured;
- questioned TVA officials on TVA's plans for mitigating, calculating, and recovering potential stranded costs; and
- analyzed TVA's contracts to determine whether TVA has contractually relieved its customers of any obligation to pay for stranded costs.

To determine whether TVA has calculated stranded costs that could potentially be assessed against its distributors, and if so, the methodology used, we

- questioned TVA officials on whether they had calculated potential stranded costs for any of its distributors and
- obtained information on the methodology TVA used to calculate potential stranded costs for the two distributors who informed TVA of their intent to leave its system.

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To identify the options for recovering any potential stranded costs at TVA, we

- obtained and analyzed information from EIA, EEL, and CBO regarding the mechanisms for stranded cost recovery that have been used in states that have restructured their electricity industries and
- interviewed FERC officials and reviewed FERC documents pertaining to stranded cost recovery.

We conducted our review from April 2000 through January 2001 in accordance with generally accepted government auditing standards. To the extent practical, we used audited financial statement data in performing our analyses, or reconciled the data we used to audited financial statements; however, we were not able to do so in all cases and we did not verify the accuracy of all the data we obtained and used in our analyses. Information on TVA's debt reduction, deferred asset recovery and projection of the future market price of power was based on TVA's anticipated changes to the 10-year plan at the time of our review.

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## Organizations Contacted

During the course of our work, we contacted the following organizations.

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### Federal Agencies

- Congressional Budget Office,
- Department of Energy's Energy Information Administration,
- Federal Energy Regulatory Commission,
- Office of Management and Budget, and
- Tennessee Valley Authority.

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### Bond Rating Agencies

- Moody's Investors Service, New York, New York, and
- Standard & Poor's, New York, New York.

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### Customer Representative or Trade Group

- Tennessee Valley Public Power Association, Chattanooga, Tennessee.

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**Others**

- Federal Accounting Standards Advisory Board, Washington, D.C.,
- Edison Electric Institute, Washington, D.C., and
- Standard & Poor's DRI, Lexington, Massachusetts.

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# Mechanisms for Mitigating Stranded Costs

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In the states that have restructured their electricity industries, there have been three commonly used mechanisms to mitigate stranded costs. These mitigation measures can be employed either before or during restructuring. Depending on the approval of state regulators, utilities have the following options:

- **Securitization** – Under securitization, state restructuring legislation authorizes a utility to receive the right to a stream of income from ratepayers, such as a competitive transition charge. The utility turns over that right to a state bank for cash, thus effectively refinancing present debt and trading a regulated income stream for a lump sum of money. The state bank issues debt (i.e., sells bonds) secured by future customer payments or the competitive transition charge on customers' bills. The benefits from securitization stem from lower financing costs – the state bonds generally are free from state tax and have a higher rating than the utility, thus reducing interest expense. Therefore, the customer surcharge required to pay off the bonds is less than the charge that would be necessary to produce the same amount of money had the utility issued the bonds itself.
- **Mitigation before restructuring** – With this option, regulators allow a utility to take steps to reduce potential stranded costs before full restructuring is implemented, including allowing accelerated depreciation. To the extent a utility is permitted to mitigate potential stranded costs, customers benefit.
- **Mandatory asset divestiture** – Requiring a utility to divest itself of generating assets produces revenue that can be used to recover potential stranded costs, potentially benefiting all customers. When a utility sells its assets, it can use the cash to reduce debt. At the same time, it no longer has to recover the cost of those assets, making its power potentially more competitive. However, it also must now purchase power and is thereby subject to market risk. In addition, proceeds from the sale are assumed to cover the book value of the asset; if not, potential stranded costs remain. Also, asset divestiture affects stockholders; to the extent a utility receives cash in excess of book value, stockholders benefit.

# Comments From the Tennessee Valley Authority

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

David N. Smith  
Chief Financial Officer and Executive Vice President  
Financial Services

February 14, 2001

Ms. Linda Calbom  
Director, Resources, Community and Economic Development,  
Accounting and Financial Management Issues  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Ms. Calbom:

Thank you for the opportunity to provide comments on the GAO's draft report entitled, *Tennessee Valley Authority—Debt Reduction Efforts and Potential Stranded Costs*.

As discussed previously by telephone, there are three key subjects covered in the report upon which we are compelled to express our concerns and disagree with your findings. They are: (1) Market Prices for Electricity, (2) TVA's Financial Condition compared with others, and (3) Deferred Assets and the implication that they represent Stranded Costs.

## Market Prices for Electricity

While we agree with your observation that future market prices "*cannot be predicted with any certainty*," we are puzzled by the general direction of prices indicated in your report.

Your report cites sources that now seem to be predicting lower future market prices than they were projecting just 3 years ago. This is contrary to all evidence that TVA has seen in the marketplace during this time, for example:

- actual, current, trading prices have increased
- "forward" prices offered by suppliers have increased
- long-term contract prices offered by others have increased
- prices for correlated energy sources, like natural gas, have also increased.

Considering these and other factors, TVA, and our expert consultants (Resource Data International, Inc., and Standard & Poor's DRI), project higher future market prices compared with 3 years ago.

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To cite just one example of both the direction and volatility of market prices, the Eastern U.S., December 2000, average prices for electricity and gas were \$72 and \$9.43, respectively. This compares to average prices for the previous two years of about \$20 for electricity and \$2.45 for gas. Both the absolute *increase* in prices and the *volatility* in prices suggest higher prices for electricity in the future than previously thought.

Furthermore, not only do we believe that selling prices will be higher in the future, we have also incorporated the impact of that assumption in our estimates of TVA's costs for the future. In other words, we have forecast increases in our own costs to the extent we are exposed to rising prices for purchased power, natural gas and other fuels.

If future prices turn out to be lower, as predicted by your sources, our costs will also likely be lower than we now predict and still be below market. In the event that future prices do increase in line with our forecasts, our projected cost will still be well below our forecast range of future market prices.

#### **Comparing TVA's Financial Condition with Private Utilities**

We appreciate the fact that GAO recognized that TVA has improved its financial condition since 1994. However, we must take exception to the report's findings that our

*"...financial condition compares unfavorably to likely competitors."*

Fundamentally, we believe that the most important factor in assessing a company's "financial flexibility" for competing in the future is its total cost of delivering electricity, not just its financing strategy. Factors of equal importance include generation capacity and mix, cost and access to fuel, transmission capability, geographic location, and access to and cost of capital.

We believe that TVA's competitiveness with other utilities is best reflected by a single statistic: the residential price of electricity in the TVA region is 23% below the national average—a ranking that is improving as many utilities are now raising prices. Our selling price, in turn, is a direct function of our cost: not surprisingly, TVA's total production cost ranked second in the U.S. among the 50 largest power producers.

Most of your financial ratios ignore our total cost and merely reflect the differences between the capital structure of TVA and that of investor-owned utilities. For example, your ratios compare TVA's *total cost of capital* (28% of revenue) with the *partial cost of capital* (9% of revenue for interest only) for investor-owned utilities (IOUs). It is surely neither a surprise, nor an indictment of TVA, that we cannot legally avail ourselves of equity capital as the IOUs can. We are confident that a fair comparison of the total cost of capital for our likely competitors would yield a more favorable comparison.



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Other of your financial ratios are distorted by not recognizing the uniqueness of TVA's business compared to our likely competitors. We are a wholesaler: they sell at retail and often include energy trading revenues as well. So, whenever you compare any *cost to sales*, the ratio will always seem higher for TVA, where the cost is divided by a smaller, wholesale revenue number.

#### Deferred Assets and Stranded Costs

We believe the report is misleading when it implies that the historical accounting value of any particular set of assets determines the potential for stranded costs. In any enterprise, some assets will be worth less than their original cost: others will be worth much more. Only the net market value of all assets *combined* is germane to the determination of stranded cost and, even then, only if their amortization drives total cost above market.

No one, to our knowledge, considers deferred assets to be a proxy for stranded costs. Indeed, you acknowledge elsewhere in your report that stranded costs are created in a deregulated environment only when an entity is unable to cover its total costs from revenues derived from selling at market prices. This is consistent with TVA's view and it is the official FERC definition of stranded investment, as well.

The competitive challenge for any utility will be to manage its cost structure in such a way that the market price for the types of products and services they offer will be sufficient to cover their cost of doing business. We believe TVA's costs *will be competitive* with market prices in the 2007 timeframe, however, if legislation passes which creates "stranded costs" for TVA by artificially restricting our ability to sell at market, then we would have no choice but to seek recovery from departing customers.

#### Looking Back

Much has been achieved by TVA since the publication of its *Ten Year Business Outlook* in July 1997. We appreciate GAO's recognition of the fact that TVA has made progress in reducing its debt and recovering the costs of certain "deferred assets." By the end of the current fiscal year, TVA will have reduced its debt some \$2.2 billion. More importantly, TVA's annual interest expense will be \$300 million less than it was in 1997, reduced to a 24% share of revenue from 34% just four years ago. And, TVA will have recovered about \$2.0 billion in costs associated with deferred assets.

The primary goal of our 1997 Plan remains today as it was then—to ensure that TVA will be in a position to deliver competitively-priced power to its customers in 2007. That goal is consistent with your belief that:

*"Stranded costs could result if TVA were unable to recover all its costs when selling power at or below market rates."*

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**Appendix III**  
**Comments From the Tennessee Valley**  
**Authority**

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While our strategies for achieving that goal have evolved in step with changes in business conditions, the goal remains the same.

One example of a changed strategy was the TVA's decision to invest in additional generating capacity to meet the growing demand for electricity, rather than to rely solely on the market to supply that power. Taking this action required an investment of funds that otherwise would have been applied to debt reduction. But, we are confident that the change in strategy will help to ensure that TVA's power system remains reliable and it will lower TVA's cost of power over the long run, consistent with the Plan goal.

Thank you again for the opportunity to provide these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "David N. Smith", with a stylized flourish at the end.

David N. Smith

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# GAO Contact and Staff Acknowledgments

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GAO Contact	Rob Martin, (202) 512-4063
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Acknowledgments	In addition to the individual named above, Richard Cambosos, Jeff Jacobson, Joseph D. Kile, Mary Merrill, Donald R. Neff, Patricia B. Petersen, and Maria Zacharias made key contributions to this report.
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